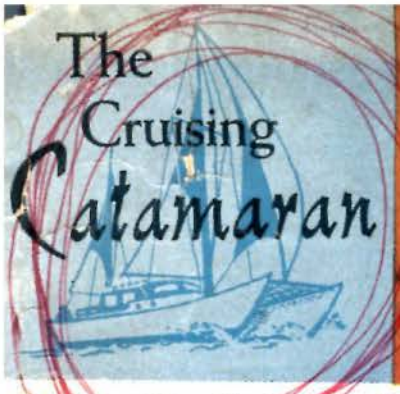

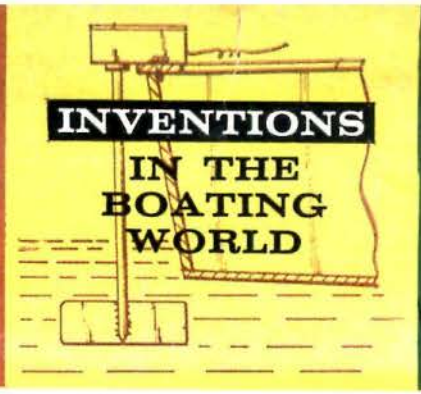

BOATING'S FIRST MAGAZINE

RUDDER

JANUARY 1963
Price 50 Cents
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The Christmas Mystery

New 75 hp Sea-Horse
Electramatic Motor

Meet water skiing's 5-Star Admiral!

Shifts automatically, electrically! Most responsive outboard ever built!

Want blistering pick-up for skiing? Want big dig for big loads? Trust this new 75 hp Super Sea-Horse V-engine. Revolutionary new electric clutch engages in a split-second . . . makes this the most responsive outboard ever built! Other features: 20-ampere alternator generator; 5-way super-silencing; a healthy 89.5 cu. in. displacement for impressive reserve power and longer engine life. Your Johnson dealer's listed in the Yellow Pages. See him soon. Other models to check out: the 28 hp "Convertible" and the new Johnson Compacts at 18, 10, 5½ and 3 hp. For free catalog, write: Johnson Motors, 1341 Pershing Rd., Waukegan, Ill., Division of Outboard Marine Corp.

JOHNSON First in Dependability

Exclusive Electramatic Drive

Outboarding's first truly automatic transmission. Unique directional throttle (no extra charge) controls both gas and gears. Makes driving sure, docking easy. Available at 75 and 40 hp.

'63 Aristo-Craft READY NOW!

TWO HULLS for the PRICE OF ONE

■ DOUBLE STRENGTH

Engineered to take roughest use . . . give extra years of trouble-free pleasure. Hulls are fused together under tremendous pressure. They're positively true . . . won't warp or twist.

■ DOUBLE SAFETY

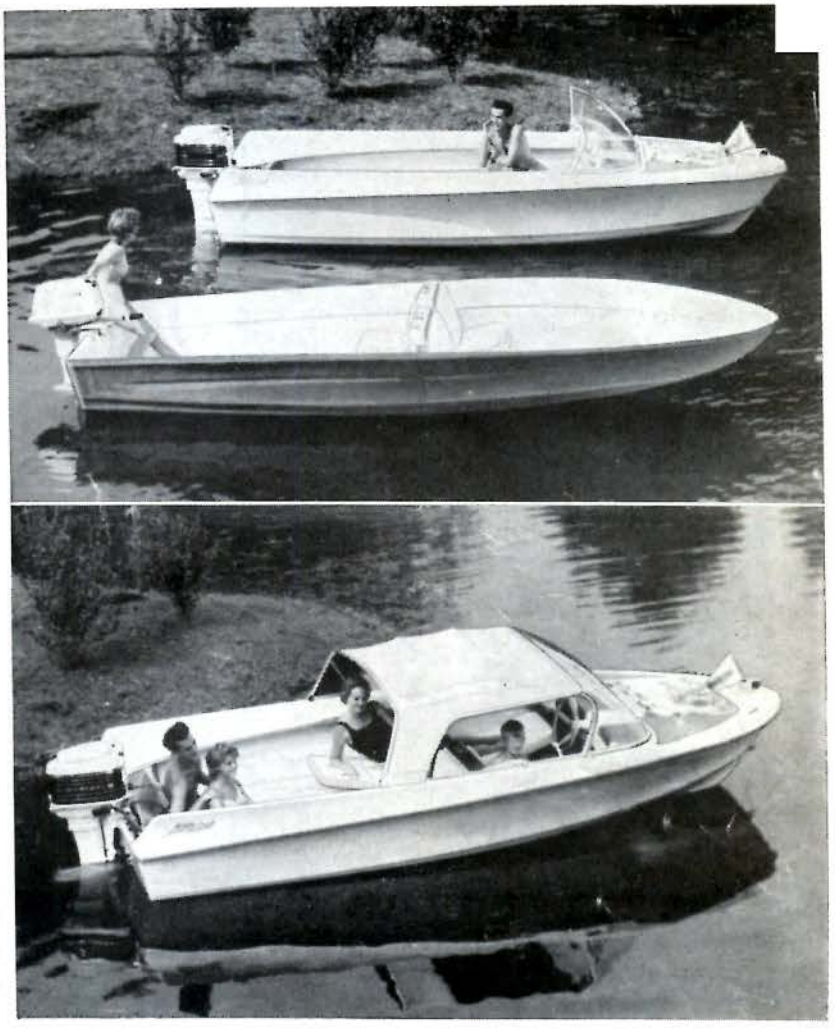
It's like having a spare boat along. Two heavy hulls of premium fiberglass to give you an extra sense of security on any water.

■ DOUBLE BEAUTY

Interior of inner hull is finished with gleaming beauty-smooth Gelcote that's molded in. No crude splatter-finish or pasted-on vinyl.

■ DOUBLE VALUE

Production of just one proved and perfected model in the industry's most modern plant makes it possible to give you even more value than last year at the same unbeatable price of $995.



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AMERICA'S ALL-PURPOSE BOAT EVERYBODY LOVES

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Atlanta Boat Works, Dept. R
665 Pylant St., N.E.
Atlanta 6, Ga.

☐ Please send literature and complete specifications on the 1963 Aristo-Craft Funliner

☐ Send name of dealer nearest me.

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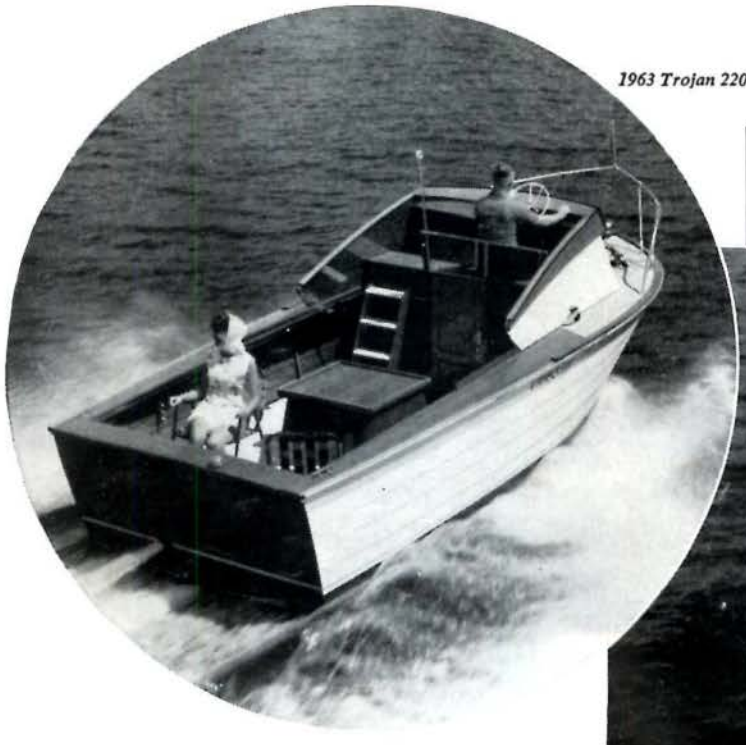
ATLANTA 6, GEORGIA



1963 Trojan 2200 Sea Skiff Martinique (21'1" x 8'6")

1963 Trojan 2200 Sea Skiff Manhattan (21'1" x 8'6")

IN

THE

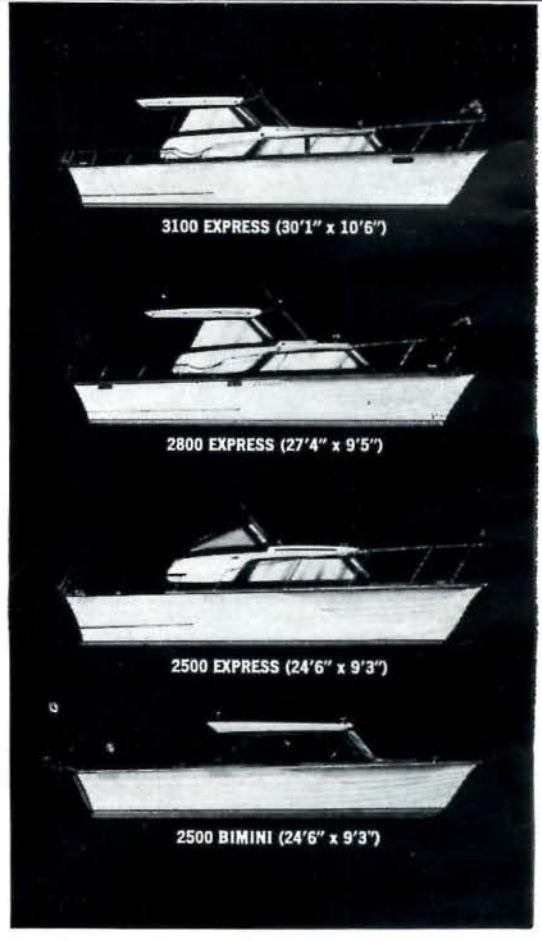
TROJAN SEA SKIFF

LINE

THERE ARE 6 BEAUTIFUL MODELS TO CHOOSE FROM

The traditional appeal of a lapstrake hull cannot be denied, especially when it is combined with Trojan's distinctive styling and luxurious cabin appointments. Your choice of six different models, from 21 foot day cruisers to 30 foot yachts sleeping six adults, lets you pick your pleasure to fit your purse. A comparison will show that the Trojan lapstrake hull, utilizing white oak framing, is second to none for strength, ease of handling and rugged durability.

Be sure to see the Sea Skiff Line as well as the Sea Voyager and Sea Breeze Lines at your local Trojan dealer's. Meanwhile, write for complete new literature which completely illustrates and describes all three of Trojan's new lines for 1963.



TROJAN BOAT COMPANY LANCASTER 16, PENNSYLVANIA

The sleek nine passenger hydrofoil Commutaboat I, shown during demonstrations in Long Island Sound, will tour the United States. She is an exceptionally comfortable boat. Powered by two 80 hp. Mercury motors, she has a cruising speed of more than 30 knots. Her hull is aluminum, and she can be modified for use as a pleasure boat

THE RUDDER
INCORPORATING BOATS
VOLUME 79, NUMBER 1

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The two lads on our cover are modern "Huck Finn" types. They are shown fishing in the Chesapeake from the deck of a houseboat powered by Bundy Motors

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THE MAIL BARREL

Cave Size Wrong

Dear Barrel Editor:

Mr. Stewart Robertson's article "A Southern California Cruise," in November *Rudder,* I found very interesting. However, I was indeed surprised to read on page 44 his statement: ". . . The entrance to the cave is narrow, six feet high and about six feet wide, just enough to admit a dinghy."

Enclosed is a picture of the Painted Cave which we took recently, showing its actual dimensions of 150 feet high and about half that in width. Mr. Robertson must have a huge dinghy to fill that space!

Perhaps he meant the "apex" rather than "entrance?" Or maybe that ride on the back of a 200 lb. seal made him a little confused! How handy to have scales along on that junket!

Carolyn West
San Pedro, California

Painted Cave, Santa Cruz Island, California. Entrance from ocean is 150 feet high; second chamber back (view shown) is measured at 40 feet

The Real McCoy

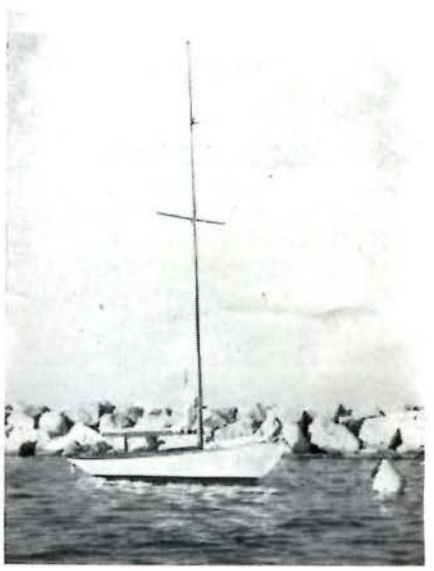
Gentlemen:

I can identify the "Mystery Sloop." I own the starboard half of it.

Though I am a subscriber to *Rudder,* I had missed the inquiry in the May issue as we were using all of our spare time to work on that same boat, from March 'till mid July, in fact. Reading was but one of the things neglected during that time, and only recently did I realize that the letters in later issues referred to our boat.

We bought the boat last year from its former owner in Bay Port, Michigan, and sailed it home to Harrisville on September 29, 1961 in gale force winds on a reefed main sail only. We made it in one day, a distance of about eighty miles, and it was some sail!

The boat was sold to us as an Arrowhead and the mainsail designation is "Arrowhead 1." I had seen the plans for the Arrowhead and as our sloop is much more boat in all respects, and keeled too, I doubted that it was such.



The boat is of very professional construction and is 20 ft. 8 in. overall. The hull is of mahogany concave, convex edged strip planking, which we have fiber glassed to just above the waterline. We also replaced forty white oak ribs and completely refinished all woodwork.

I had written "What's Your Problem?" because, in spite of its top quality appearance and workmanship, steel screws had been used in its building and we had a problem! We have since replaced them with brass. That only took about six weeks to do.

I think the identification by Mr. R. H. Preller of East Falmouth, Massachusetts is an accurate one. He said "It is an Arrowhead, designed for Mechanix Illustrated as a centerboard, but built as a keel model by Kingman Marine, Cataumet, Massachusetts." If so, I wonder how it got to Michigan.

She's a sweet boat, at any rate, and sails beautifully, especially so in heavy weather of which we have plenty on Lake Huron.

Morley E. Wallace
Harrisville, Michigan

Only Starcraft gives you such a wide choice in 15-ft. runabouts–aluminum and fiberglass!

Clockwise, beginning in the lower left-hand corner, are the Stardust, Catalina, Starmist and Comet; 16-foot runabouts in lapstrake aluminum and fiberglass. Ideal for use as ski boats, or for cruising and fishing. They offer handsome interiors, lapstrake durability, smooth performance.

The 21 ft. Chieftain and 9 ft. Pram illustrate the wide range of choice provided by Starcraft! 38 fiberglass and aluminum cruisers, runabouts and fishing boats. Packed with comfort, convenience and beauty. Requiring a minimum of upkeep. See them at your dealer's.

Take your pick from among these lapstrake beauties in aluminum and fiberglass. There's Jet (the nation's leader in sales among runabouts), its new twin, Jet Star . . . plus saucy Newport, dashing Lancer and lithe Saber.

Take the helm of any one of these peerless five . . . and get set for new boating thrills! Silken-smooth performance. (Less noise and vibration.) Ballerina grace on turns and curves. (Lapstrake construction by Starcraft is special. Laps prevent sliding and slipping . . . give you a smooth, dry ride.)

Cast your eyes over the luxurious interiors. Choose from such luxury features as wall-to-wall carpeting, upholstered ski racks and elegant trim. Plus convenient seating arrangements, spacious storage areas and striking color combinations.

Only Starcraft gives you such luxury boating at popular prices. $635 to $875 f. o. b. factory. See these boats in the new Starcraft catalog. Write for your free copy.

STARCRAFT BOAT COMPANY, Dept. RU-1, Goshen, Ind.

STARCRAFT

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The Portable Refrigerator that operates on alcohol, 12 volts D.C., or 110 volts. Weighing only 37 pounds, the GALLEY-FRIDGE goes everywhere. It even makes ice-cubes!

GALLEY FUEL

The wonder fuel supply that makes the "GALLEY-FRIDGE" possible. Comes in safe disposable cylinders. *No* spill. No fuss, No pumping. $1.95 each or in a handy carry six-pack for $11.50.

Spoiled Food Spoil Your Day?

At last the answer to a boatman's prayer. This unique refrigerator operates on the same principle as many home refrigerators but has no moving parts, and is completely silent in operation.
One cylinder of alcohol lasts up to 60 hours (2½ days) of continuous operation.
So reliable it comes with a 5-year guarantee!

WRITE NOW FOR THE NAME OF YOUR NEAREST DEALER.

Available in **six** different power-source models:

GF-A Alcohol-powered only	**$139.50**
GF-12 12 volts battery-powered only	**$139.50**
GF-110 110 volts AC/DC powered	**$139.50**
GF-A/12 Combination, alcohol or 12 volt powered	**$159.50**
GF-A/110 Combination, alcohol or 110 volt powered	**$159.50**
GF-110/12 Combination model operating on either 12 volts D.C. or 110 volts A.C. power	**$159.50**

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PORTABLE APPLIANCES, INC.,
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A clean sweep at the National "Stocks" proves it again...

Outboards take off and travel with new silvery-plated Champion spark plugs!

It's the '62 APBA National Stock Outboard Championships at Guntersville, Alabama. And boiling wakes are tracing consecutive victories by Champion-fired contenders. First in one class! First in another . . . and another . . . and another! America's favorite marine spark plugs are taking *all* ten classes to rack up still another clean sweep!

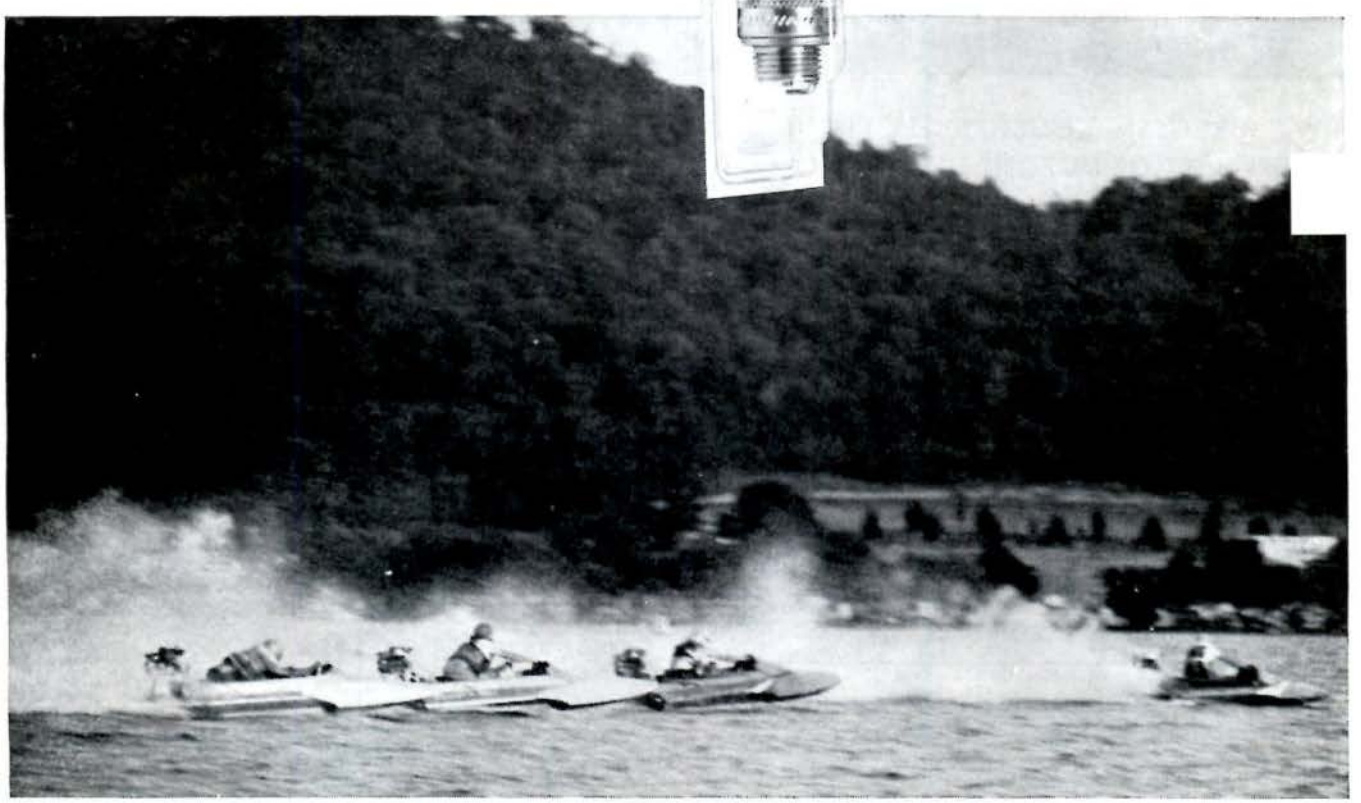
And most all of those winning, Champion-sparked outboards are *stock* models, like yours. It's proof: your own engine will come across with peak performance, every time . . . when you cast off with Champions.

So make sure the next tune-up you buy is complete . . . make sure it includes a set of new silvery-plated Champions.

DEPENDABLE CHAMPION SPARK PLUGS

CHAMPION SPARK PLUG COMPANY
TOLEDO 1, OHIO

When the wakes settle, it'll be 10 wins out of 10 classes for Champions—the spark plugs that fire more marine speed and performance victories than all other spark plugs combined!



EVERY MAJOR U.S. OUTBOARD MAKER INSTALLS CHAMPION SPARK PLUGS

Great news for boat owners!

NEW ULTRA V SPAR VARNISH LASTS 2 TO 3 TIMES LONGER THAN CONVENTIONAL SPAR VARNISHES

EXPOSURE TESTS CONCLUSIVELY PROVE SUPERIORITY OF DU PONT ULTRA V

From Du Pont research laboratories comes new Du Pont Ultra V Spar Varnish—the tough clear finish that lasts 2 to 3 times longer than ordinary marine spar varnishes. These results have been confirmed by hundreds of field tests by a wide cross-section of seasoned boat owners.

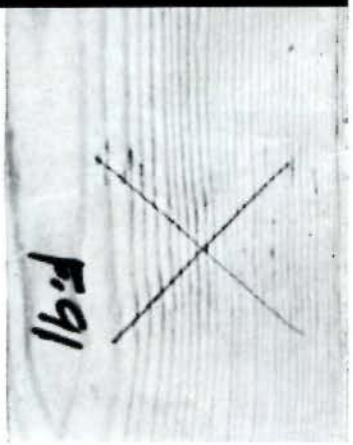
Unlike ordinary marine clears in current use, Ultra V is formulated with a special ultraviolet absorber that has unusual resistance to sun rays.

Tidewater exposure tests, as well as exposures in Florida, Texas and Delaware, conclusively establish the superior gloss retention and long life of this new "bright work" finish.

Here at last is an easy-to-apply, tough, durable, long-wearing clear marine varnish you've been asking for. Now . . . at your nearest Du Pont "Dulux" Marine Finishes dealer or boat yard.

Visit the Du Pont Booth, No. C-35, National Motor Boat Show, Jan. 12-20 New York Coliseum, N.Y.C.

The panel above indicates the typical appearance of 3 coats of a good grade of marine spar varnish after 12 months' Florida tidewater exposure.



This panel was finished with 3 coats of Du Pont Ultra V Spar Varnish and exposed under exactly the same conditions for the same length of time. See the difference!

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DU PONT
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BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

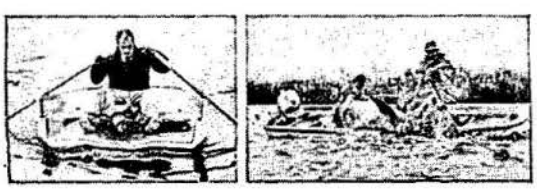
*Second safest boat**

It misses first place only because it is not damfoolproof. Here are some ways you can get hurt in it:

- Drive it into a seawall at high speed.
- Take it out solo, jump (or fall) overboard and try to "whistle" the driverless boat into returning to pick you up.
- Try to see how far you can go in overpower, speed, fool stunts. When you find the limit, the consequence might involve an unpleasant surprise.

If you care to forego this sort of thing, you will find in a Whaler:

- Safety and controlability through breakers and following seas.
- Safe operation even if fully swamped with a full crew.
- Stability and seaworthiness that has been proven in such extremes as hurricanes—when other boats of comparable size were inoperative.
- More plain boating fun than you've ever had.



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THE FISHER-PIERCE CO., INC.

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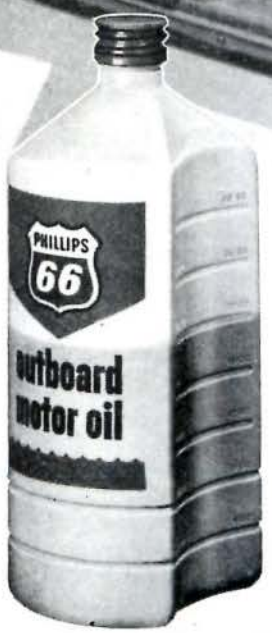
**In the safest boat only one hazard remains. Some people are dangerously sensitive to the sting of an insect which often frequents boats of this type. This problem can generally be avoided by a policy of peaceful coexistence.* The safest boat is illustrated on page 58



Phillips *66* Outboard Motor Oil now comes in a new Marlex* polyethylene container . . . lightweight, unbreakable, easy to grip and hold. Sealed, tamper-proof safety cap. Translucent, molded-in calibrations to permit measured use when mixing oil and gasoline. Will not roll.

"My choice of a trouble-free Outboard Motor Oil is Phillips"

Having 50 years of boating experience, J. K. Metcalfe of Omaha knows the very best. That's one good reason why he uses Phillips *66 Outboard* Motor Oil in his 75 hp Johnson Motor. Mr. Metcalfe says: "I want my motor to be in top shape all the time. That's why I rely on Phillips *66* Outboard Motor Oil. I know my plugs will stay clean, rings won't stick, and my motor will deliver top performance." Phillips *66* Outboard Motor Oil is the choice of boating enthusiasts everywhere.

Thousands of satisfied users know Phillips *66* Outboard Motor Oil gives easy starting, up to 65% less piston varnish, up to 38% less ring sticking. Rusting is virtually eliminated. You get up to 3 to 5 times longer peak-power firing, longer "new-motor" life.

*A trademark

PHILLIPS 66

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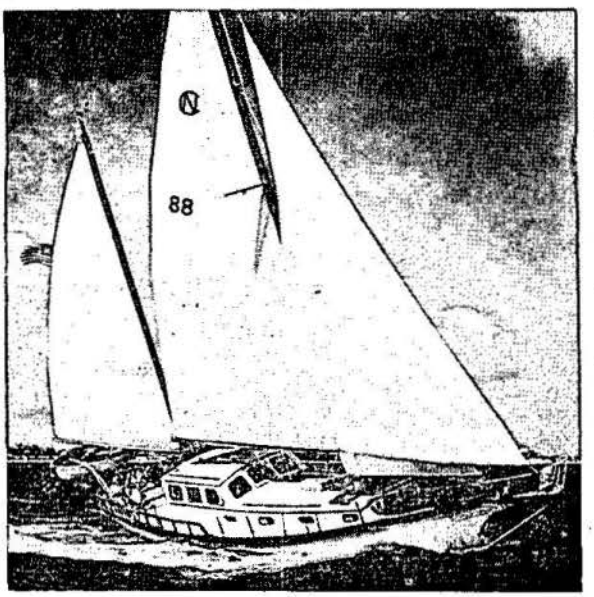
You never had it like this before, on a 40' sailboat. Pictures can't do it justice. There's no substitute for going aboard. Once you see it, you'll be convinced that if you want sailing luxury you want a Newporter. Write for our illustrated brochure.



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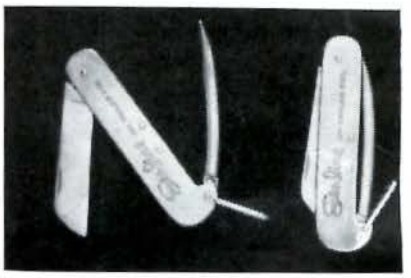
QUESTAR
BOX 80 NEW *HOPE, PENNSYLVANIA*

By MARY DENNEN

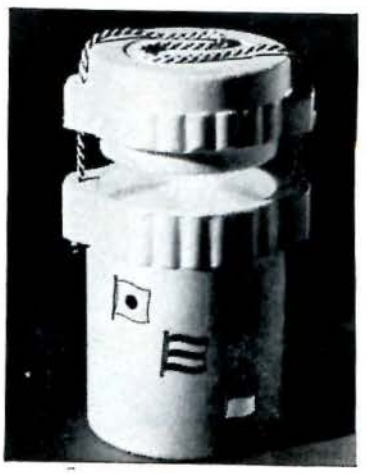
afloat

"Bright-Mite" is a tiny rechargeable flashlight no bigger than a matchbook. Delivers light for up to five hours and is restored to life by an overnight charge. Handy re-charger can be plugged into any 120 volt AC electric outlet. Both bulbs can be used for extra brilliance, or one bulb can be reserved as a spare. Refracting lens, and space-power batteries enable "Bright-Mite" to throw more light than a conventional two-battery dry cell torch. Unconditional two-year guarantee. $6.90 from R. C. Sales Co., Dept. R, Box 285, Middletown, N.Y.



Seal/Line marine knife of 100% stainless steel is of the finest cutlery quality; it features a 2½ in. cutting blade on one side and a 3 in. marlin spike on the other. It is impervious to rust and maintains an excellent cutting edge and is manufactured to exceed Coast Guard and government specifications, $2.75 from West Products Corp., Dept R, 205 East 42nd Street, New York 17, N.Y.

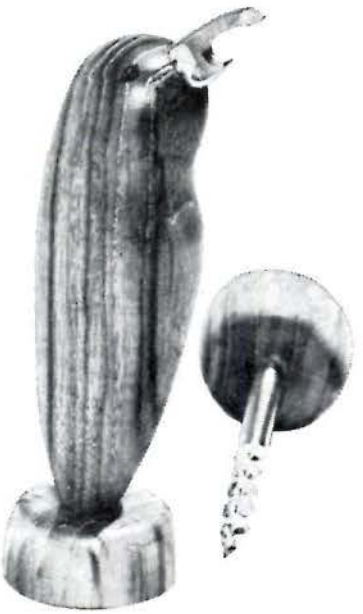
Portable Vacu-Vise is a valuable third hand for the boatman in effecting repairs. Small, easily stowed, it mounts where you need it. A new super-vacuum base holds firm to any non-porous surface. Large 2½" jaws with "V" grooves hold your work firmly to counter top, deck, even to the bulkhead, yet a fingertip touch on the Vacu-lever releases it for stowage when the job is done. Measures just 7" x 4" x 4" and weighs only 4½ pounds. $6.95. From The Crow's Nest, Dept. R, 16 East 40th Street, New York 16, N.Y.



New nautical ice bucket decorated with signal flags that spell ICE. This lightweight bucket is made of insulating plastic and is equipped with a bright braided lanyard that holds the cover attached to the base and permits it to be hung from the yardarm so there are no worries of falling or spilling. 8½ in. high by 5½ in. in circumference, it will hold up to 2 trays of cubes from 12 to 24 hours. $2.00 from Konform Packaging Corp., Dept. R, 10 State Street, Boston, Mass.

For sailors and their shore-side kin, a bounty of attractive wares—not necessarily nautical—that can be ordered by mail

n'ashore



Bottle Bird beautifully designed of satin smooth, brown striped teakwood standing on a base containing a steel corkscrew. Shining brass beak is a bottle cap remover. It has that extra quality of a product thoughtfully made and carefully finished. $3.95. From Thomas Edlyn Co., Dept. 438R, Box 362, Collingdale, Pennsylvania.

Personalize this handsome vinyl 11 by 15 in. serving tray with a photograph of your boat. Choose red, blue, black, yellow or white for the tray and send an 8 by 10 in. photo either black and white or color to be laminated into tray. Ideal gift for the man who loves his boat. $9.75 from Bell Enterprises, Dept. R, 545 Fifth Ave., New York 17, N.Y.

The Landam Heater gives instant hot or cold water from a cold water faucet, at the flip of a switch. Just screw the heater on to the cold water faucet, flip the switch to hot, and in ten seconds flat you've got piping hot water for washing dishes, light laundry, shaving, a quick wash-up, making instant coffee, tea, soup, chocolate. A must for small and medium size boats which can plug into dock-side current. $27.50. From Landam Products Corp., Box 44R, Great Neck, N.Y.

Automatic Sewing Awl saves money on repairing convertible tops, sails, awnings. Simple push-pull action makes firm, even lock-stitches like a machine. This kit gives you an Automatic Awl with 3 different needles, strong waxed thread on a self-feeding bobbin, and easy-to-follow directions. $3.00 from Bakers Worldwide, Inc., Dept. R, Box 57, Franklin Square, N.Y.

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EDITORIAL

SOMEWHERE in the life of every small boat sailor there is an engine. If he owns a power boat his motor, of course, is of vital importance to him, since who wants to be washed on to the beach just because the old mill stopped churning? If he owns an auxiliary, there are times when, for an example, he might be pushing to an anchorage through whirlpool currents between jagged breakwaters — and an engine that coughs into silence can be a matter of serious difficulty.

The modern internal combustion engine is a pearl of man's ingenuity and skill, and will perform remarkably well and faithfully if given any breaks at all. It is therefore important for our skipper to develop a warm spot and understanding for his faithful horses, and do all he can to enable them to function efficiently.

Now every man intelligent enough to go to sea (and return) is smart enough to learn all that is necessary to understand how an engine works, and learn how to maintain it and make the simple adjustments and repairs that are possible away from a machine shop.

With the understanding comes satisfaction, and this is followed by efficiency. In addition, the fear that the unknown engenders vanishes, and greater confidence in the ability of the boat replaces it.

In case of serious trouble when a professional has to be called in, the informed boat owner can discuss his difficulties understandably and can get a diagnosis and repairs quicker.

In general, when an engine stops there are two reactions. The untutored gets the sensation of an icy hand clutching his heart; the knowing one calmly lifts the hatch and attends to the difficulty.

The engine is the sailor's friend, and the sailor should remember that cursing it does not improve its performance, but attention does.

Bon Ramer-Leonardi

by Conrad Miller

ON THE SOUTH SHORE of Cape Cod there is a tiny town named Cotuit, a lovely little village with clean, sandy harbor and a deep bay at the north end. Cotuit Harbor and North Bay are breeze swept and just perfect for sailing.

The very best kind of boat for sailing in Cotuit Harbor is a Cotuit Skiff, naturally. Anyone knows this, especially the children of Cotuit.

Now, a sophisticated yachtsman may examine a Cotuit Skiff and see a glorified rowboat with flat bottom and homey cat gaff rig. But the sophisticated, worldly yachtsman's eyes are dimmed by the deep keel glamour of twelve meter boats and power yachts with scrubbed teak decks. Cotuit children know their own waters and their boats and they love their homey, flat bottom, gaff rigged skiffs. And Cotuit children are, and always have been sailors.

Once, many years ago, there lived a Cotuit boy, Edward Winslow. No twelve year old boy ever loved Cotuit Skiffs more than Edward. He was a likeable, bright lad, a fine sailor and a hard worker but, as of December twenty third of that year, he did not own a Cotuit Skiff. Indeed, Edward did not own a skiff or rowboat or even a raft, because the truth was that Edward and his mother were as poor as New England church mice.

Edward's father had been killed in The War; his mother was housekeeper in the big house on Bluff Point. Every day after school Edward worked for old Joseph Grayson in the boatyard across the bay in Osterville. His jobs were to clean the shop, oil tools, tend the fire and be generally useful. He liked boats and boat builders; they liked him, so he got along just fine.

Everyone in the shop from owner Grayson down to floor sweeper knew what Edward wanted for Christmas. They would encourage him to talk about it.

"What do you want for Christmas?" smiled Bill Stoker, winking at the other men. They all knew the answer: a skiff.

"I'll appreciate *what I get*," said Edward, "but I'd sure love to have a Cotuit Skiff on my dock Christmas morning."

"A new skiff costs a lot," said Stoker, "I don't think your Ma could afford one."

"Oh gosh, I wouldn't expect a *new* one," breathed Edward. "Just the oldest one in the bay would be wonderful if it were my very own."

"You wouldn't want this one, would you?" joked George Taylor, thumping the side of a brand new, powder blue skiff resting on the clean shop floor.

Edward looked at the new skiff. In his mind it was the most beautiful yacht ever built. It was a thing desired above all things. Its flat bottom, hard chines and awkward transom were transformed in his mind to the lines of a cup defender.

"I'd give anything in the world to own that beautiful boat," he sighed almost reverently. Every man in the shop was touched by his sincerity. Each remembered his own boyish longings Christmases past. Somehow, this close to Christmas, they did not care to joke about the boat any more.

"Oh, hello Mr. Grayson," said Bill Stoker, "I didn't know you were here."

"I just came in," grumbled the boss. But Bill wondered if the master builder had been listening to the conversation about Edward's longing for a skiff.

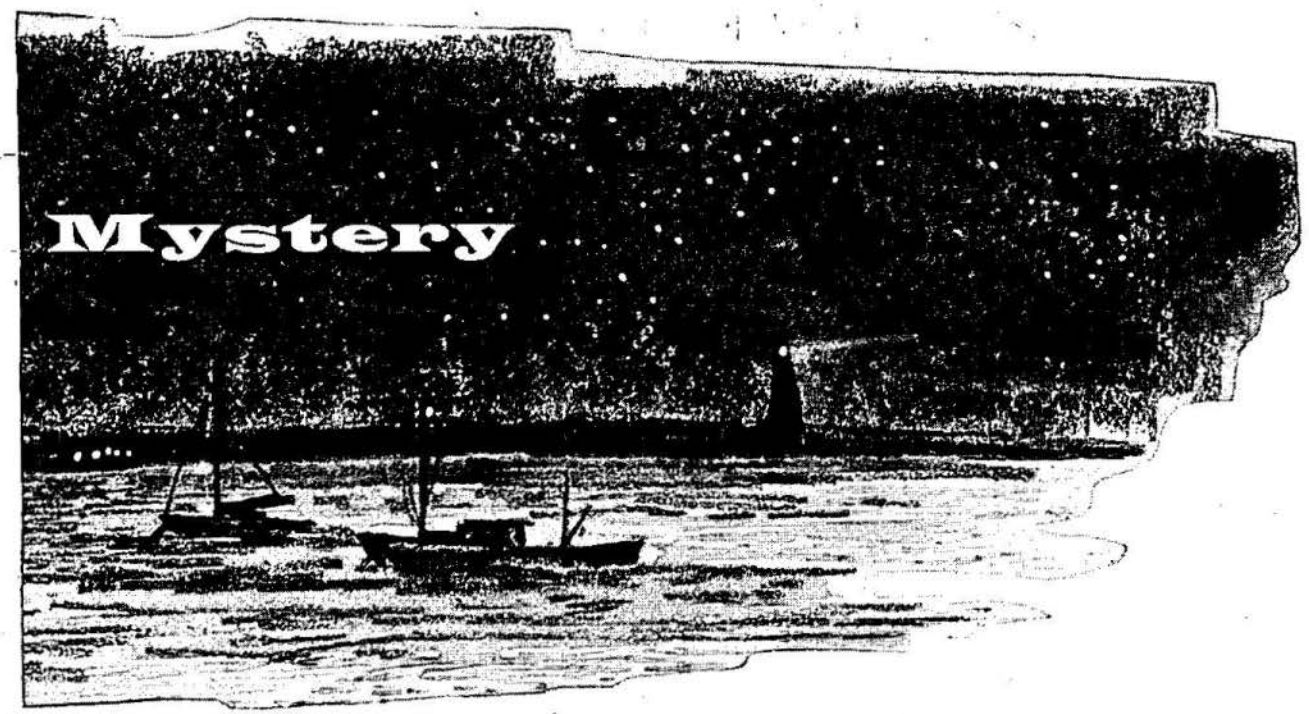
On The Cape, Joseph Grayson was respected as a fine boat builder, a fair employer, a just man. He was cool and reserved; not the kind people slapped on the back and called, "Joe." He did not joke with employees.

"I have a buyer for the blue skiff," Grayson said to George Taylor. "Load it on the Ford truck tomorrow morning and I'll deliver it to Falmouth myself at noon."

"Yes sir," responded Taylor.

Edward's heart sank at the thought of the blue Cotuit Skiff leaving the shop. He realized the little boat had to leave sometime; still, he hated the idea.

On the way home that evening he told Postmaster Hartley about what he wanted. In response to, "What do you want for Christmas?" from Mr. Davidson, storekeeper, Mr. Ellison, innkeeper, and Mrs. Thompson, who ran the delectable



This is a mystery story. A true story. No one knows what happened in Cape Cod that Christmas Eve, but here are the facts.

smelling bakery, he gave the same answer: "Cotuit Skiff."

Everyone knew what Edward wanted. Most knew it was almost impossible for his mother to buy the gift.

Christmas Eve, the Graysons attended midnight service at the wood church on Center Street. After the candlelight service, they stood on the church steps chatting with a group of friends. The night was clear and cold, but the friends were warmed by that peaceful glow which seems to make a New England country Christmas Eve a truly silent, holy night. Joseph Grayson seemed in a particularly happy, contented mood, wishing everyone "Merry Christmas!" with more than usual heartiness.

As the group broke up and the couples headed for their own firesides, Grayson turned to his wife and said, "You drive home with the Andersons, dear; I have an important errand."

"But Joe, it's Christmas Eve and we have to get things ready for the grandchildren."

"Now, m'dear, don't fuss; I'll only be a few minutes," smiled Grayson mysteriously. Then he disappeared toward his car.

"How strange!" murmured his wife. "That's Joseph. When he makes up his mind to do something, he does it; you can't change his mind with a blubber spade."

While Grayson was on his errand, Edward was being tucked into bed. His mother fussed about happily, making those tucks and blanket smoothings more an expression of love than an act of housekeeping. Edward was snuggled in blankets and covered by that wonderful Christmas Eve glow that God reserves for children only.

After a final, "Good night," Edward's mother went to the living room and lovingly arranged the simple presents she had for him. "I wish it could be more," she thought wistfully.

Imagining a thud or bump outside toward the pier, she peeked through the curtains, but it was too dark to see anything. "Must be Santa Claus," she chuckled to herself half aloud.

She was closer to the truth than she suspected.

Christmas morning, Edward rolled out of bed, looked out the window and let out a yell of joy that 'woke the house and half Cotuit. There, perched on the pier, safe above the drifting ice, was the most beautiful powder blue Cotuit Skiff ever made. It was marked "For Edward."

That was years ago, but the mystery of the Cotuit Skiff remains unsolved to this day. Grayson said he sold the skiff in Falmouth to a man named Phillips, but no one was ever able to locate Phillips or find out anything about him. And why did Phillips give Edward the skiff?

If Grayson knew more than he told, the secret did not burden his soul, because if anyone on Cape Cod was happier than Edward Winslow that Christmas it was Mr. Joseph Grayson, master boatbuilder.

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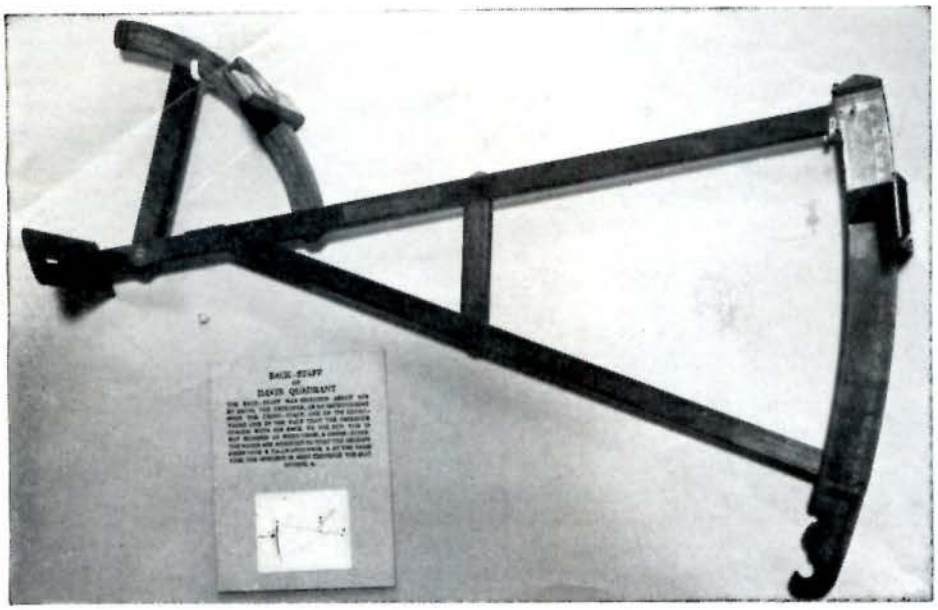

Figure C. *The back-staff or Davis Quadrant. This one was made by Thomas Greenough in 1760*

Altitudes and NAVIGATIONAL INSTRUMENTS

by Jon C. Uithol

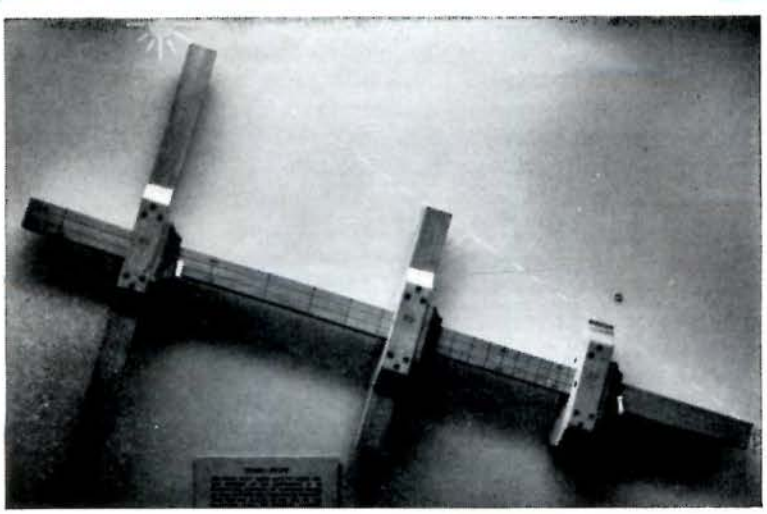

Figure B. *This is a replica of a cross-staff. It was made from an original in the British Museum*

Photos Courtesy of The Mariners Museum, Newport News, Virginia

BEFORE THE DAYS of the magnetic compass, sailors made either short voyages, or stayed along the coast so as not to become lost. However, with the compass for a guide, they started to venture farther out into the open water. If they could measure the altitude of the pole star, they could determine their latitude, since the latitude of any point is equal to the altitude of the elevated pole. Therefore, the search was on for a reliable instrument for altitude measurement.

The first instrument used was the quadrant. It was in the shape of the fourth part of a circle, made of wood or metal, and was graduated in degrees about its arc. A plumb bob was suspended from the center of curvature of the arc. The mariner held the quadrant in his hand, in a vertical position, and sighted along one edge of the instrument. A second man observed the point where the plumb bob line crossed the arc, and noted the altitude. This instrument was very difficult to use at sea because the movement of the vessel made it almost impossible to hold it steady enough to get a reading on the plumb line.

The astrolabe was the next instrument to be used at sea. It consisted of a circular metal disc suspended by a smaller metal ring at the top. (See Figure A.) It was also graduated in degrees, and had sight vanes attached to its center. The invention of the

astrolabe has been attributed to the Greek astronomer, Hipparch (160-115 BC). Although the astrolabe was invented before the time of Christ, sailors were just as slow to adopt new ideas in those times as they are today, and it was not used at sea until the fifteenth century. In the year 1402, it was reported that Jean de Béthencourt of Normandy sailed from Cadiz to the Canary Islands with his compass and astrolabe. Columbus used an astrolabe, and Magellan took seven of them with him on his first trip around the world (1519-1522). Where operation of the quadrant was a two man job, the astrolabe took three men. One held the instrument, one sighted on the star, and one read the altitude. This instrument also had to be held in a vertical plane, and because of this, it was just as hard to use at sea as the quadrant.

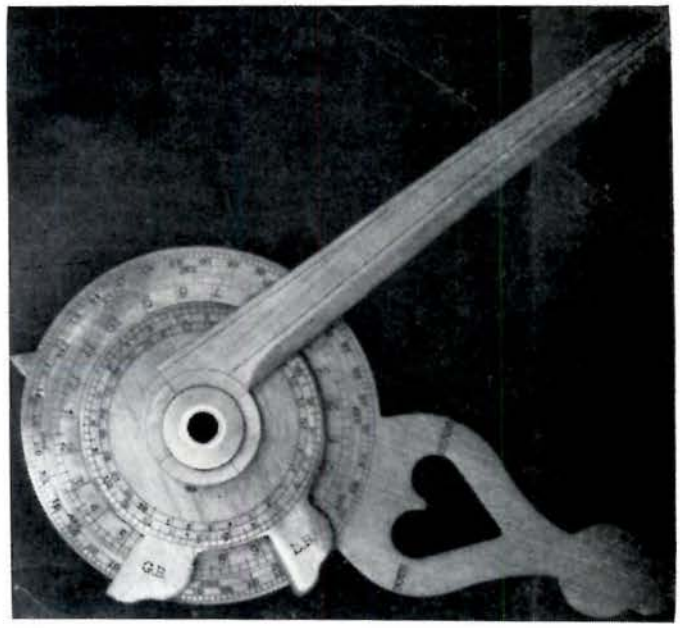

Figure A. *The astrolabe was used by such navigators as Columbus and Magellan. This one was probably used by astronomers ashore because the mariner's astrolabe was seldom so ornate*

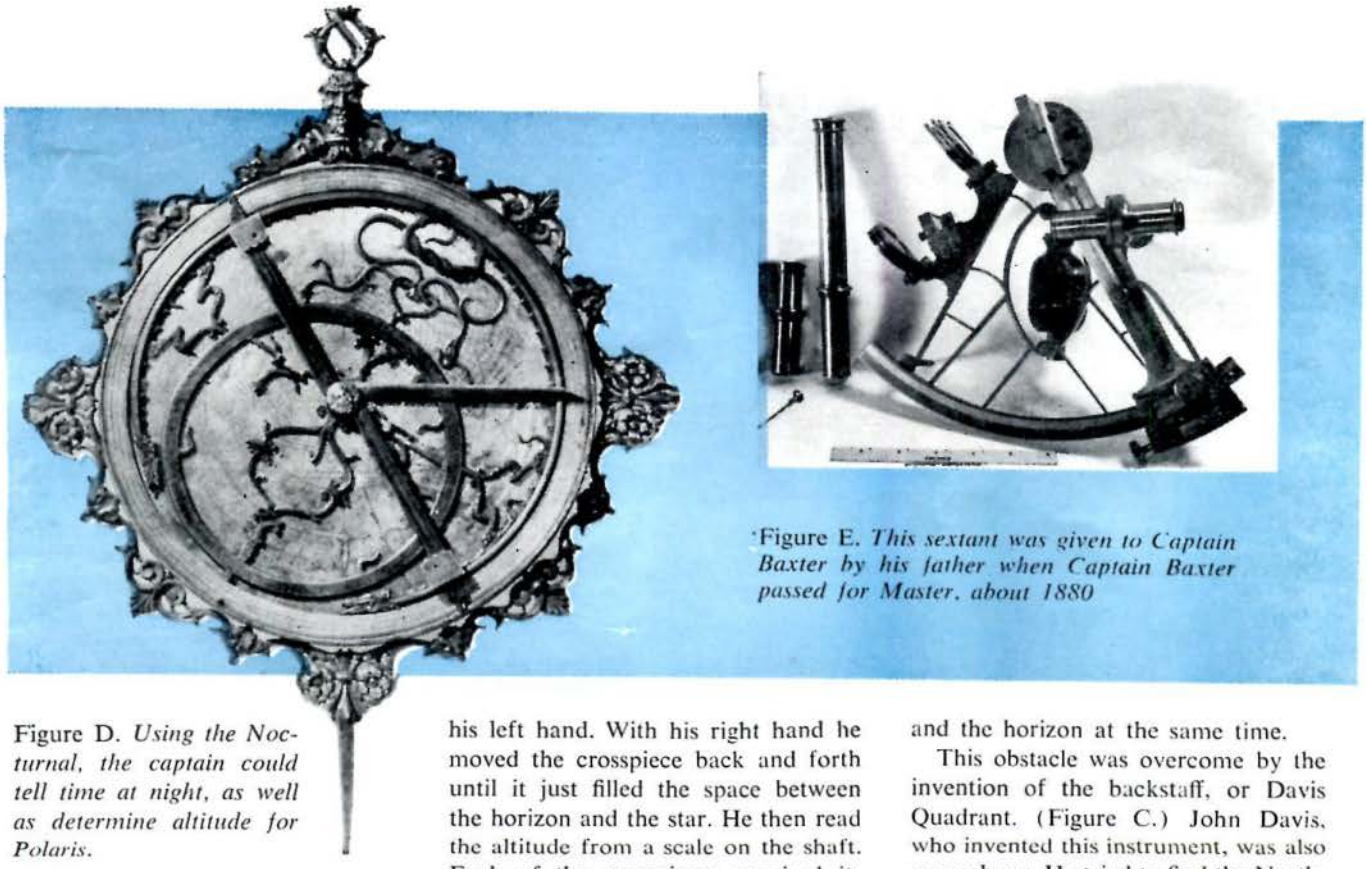

Figure D. *Using the Nocturnal, the captain could tell time at night, as well as determine altitude for Polaris.*

Figure E. *This sextant was given to Captain Baxter by his father when Captain Baxter passed for Master, about 1880*

A major advance came when mariners adopted the cross-staff (Figure B), because this instrument used the horizon for a reference rather than the vertical plane, thus doing away with the plumb bob. It consisted of a long wooden shaft to which one of three or four crosspieces were mounted perpendicularly. The mariner held one end of the shaft to his eye with his left hand. With his right hand he moved the crosspiece back and forth until it just filled the space between the horizon and the star. He then read the altitude from a scale on the shaft. Each of the crosspieces required its own scale because each crosspiece was designed for a different altitude range. To allow for this, a different scale was placed on each side of the shaft, and the proper one had to be read in order to obtain the altitude. This instrument would yield an altitude accurate to one degree or less, and although this is unacceptable today, it was so good for its time that the instrument was used up until the late seventeenth century. The main disadvantage of the cross-staff was that the observer had to look at both the star and the horizon at the same time.

This obstacle was overcome by the invention of the backstaff, or Davis Quadrant. (Figure C.) John Davis, who invented this instrument, was also an explorer. He tried to find the Northwest Passage and in recognition of his efforts Davis Strait was named after him. To use this instrument, the navigator faced away from the sun and then aligned the sun's shadow with the horizon. This had the advantage that the observer had only to look at one point, and did not have to look into the bright sun as he had had to do with all previous instruments. Davis Quadrants came into use in the late 1590s, and were popular among American colonial navigators.

Continued on page 63

INVENTIONS IN THE BOATING WORLD

by Conrad Miller

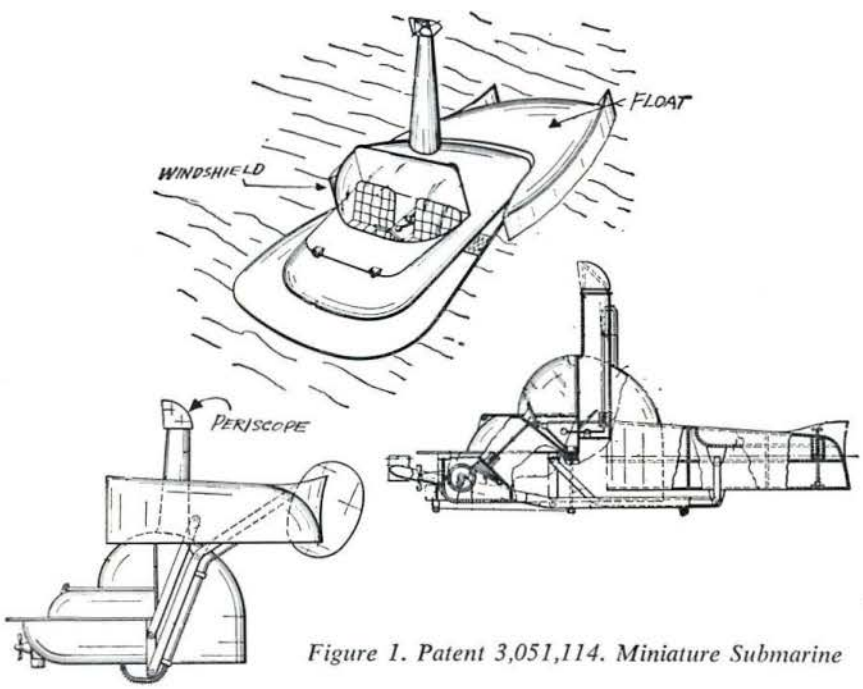

Figure 1. Patent 3,051,114. Miniature Submarine

WOULDN'T it be fun to take a ride in Figure 1? It is a submersible, invented by Roger Bajulaz, 13 Chemin Pierre Crise, Geneva, Switzerland, and designed for two people to scoot along just under the water's surface. The little sub has two seats, large watertight windshield, two sets of foot pedals and a periscope. Ventilation and degree of submersion are provided by foot operated bellows. The passenger compartment can never go deeper than periscope depth because it is pivoted downward from a floating, water tight compartment.

Skin divers, snorklers and other adventuresome souls could have a wonderful time prowling around just under the surface in the Bajulaz submarine.

Have you ever cussed and clawed at a *stubborn shackle in dark*, foul weather while trying to clutch on to a slippery deck? Then you will appreciate the snap shackle shown in Figure 2. It was patented by Wadsworth W. Mount, Warren Township, Plainfield, New Jersey, specifically for use by yachtsmen busier than a one armed sheet tender.

Mount's shackle has a spring closed clevis pivoting about a tubular member. With one hand, a sailor can push on the clevis, compress the spring and swing the shackle open. Closing is accomplished by simply swinging the clevis back until it snaps tight shut. Once closed, the more pull and strain on the shackle, the tighter it shuts.

Richard L. Cochran, Indianapolis, Indiana, has patented an efficient steering device for jet propelled boats. Figure 3 shows the invention to be essentially a wedge shaped, counterbalanced vane or rudder placed in the high velocity jet stream. The top and bottom of the wedge or rudder are fitted with flat, horizontal guides. Viewed from astern the device looks like an I-beam.

The inventor says the wedge shape is important because if the sides were parallel the stream of water would break away from the side surfaces prior to reaching the rudder's trailing edge. This would cause a dead spot in steering with boat moving straight ahead, rudder centered. The top and bottom guides are important to channel spray back into the water before it forms a plume to blind water skiers or soak the boat's occupants.

Another invention relating to jet boats is shown in Figure 4. Charles J. Dahle of Salmon, Idaho, has been granted a patent on this jet propulsion unit employing double auger-type impeller pump. Dahle states that the unit produces high water jet velocity with high efficiency. He says, "The auger pump is less damaged by dirt, trash and sand than the conventional high speed centrifugal pump often used in jet boats." The pump unit is intended for mounting at or below static waterline in order to hold prime.

Most automatic pilots are large, relatively expensive machines designed for inboard yachts of thirty feet or more. Now, however, a small, inexpensive auto-pilot for modest outboard boats has been patented. Paul R. Newcomb, 2564 Holman Avenue, Silver Springs, Maryland, is the inventor of the rig shown in Figure 5.

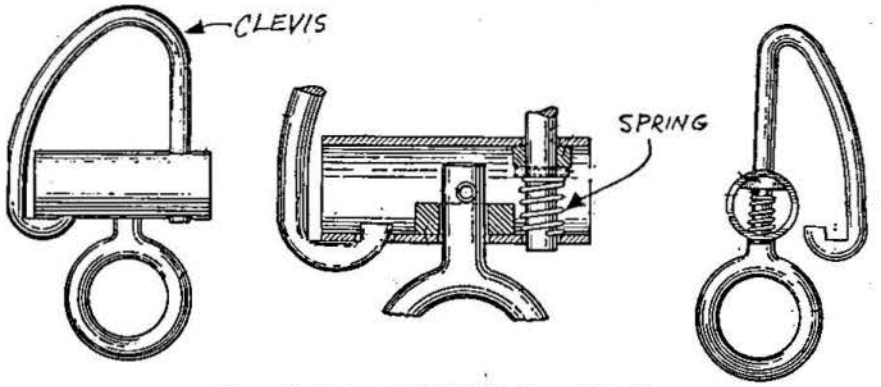

Figure 2. Patent 2,923,045. Snap Shackle

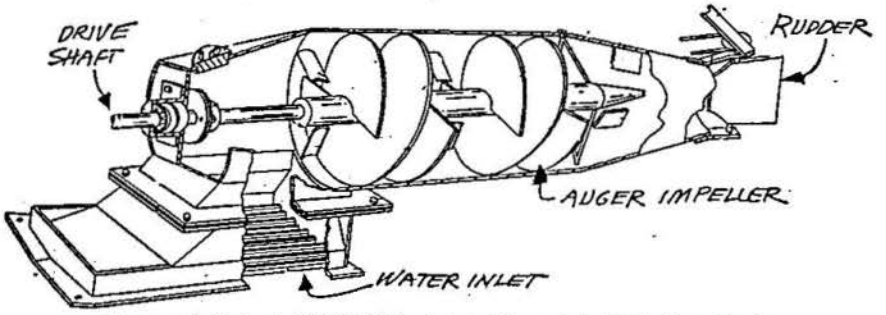

Figure 4. Patent 3,040,696. Auger-Type Jet Unit For Boats

Autopilots for larger craft usually steer the boat by turning the boat's rudder as required. Heavy steering effort comes from a strong electric or hydraulic motor through suitable chains, belts, gears and linkage. Directional sense comes from magnetic or gyro compass through suitable amplifiers.

In his miniature auto-pilot, Newcomb eliminates the need for powerful steering effort. He does not try to correct the boat's course by turning the rudder or heavy outboard motor. Instead, he uses a tiny, balanced rudder, just large enough to make course corrections. Being small and balanced, the little rudder can be directly operated by small, simple electric solenoids. Directional sensing comes from a magnetic compass having sensitive internal electric connections to the card. If the boat deviates from course, contact is made in the compass, a relay flicks and one solenoid is energized. The solenoid operates the rudder through simple linkage; the small rudder urges the boat back on course. A

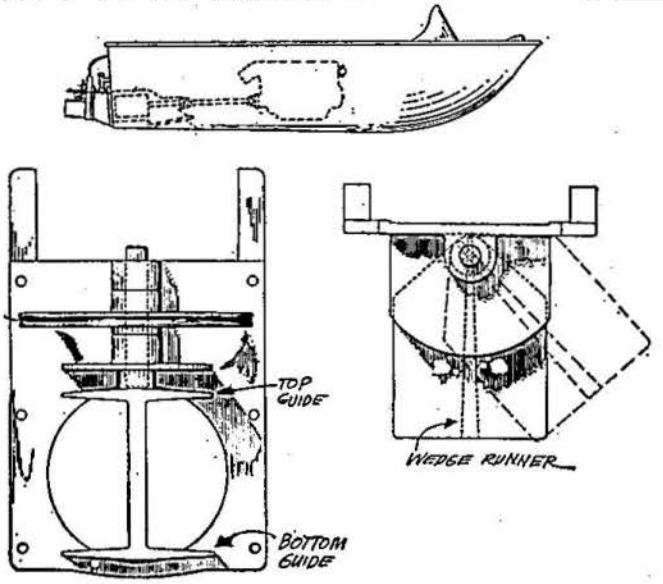

Figure 3. Patent 3,040,694. Rudder For Jet Propelled Boat

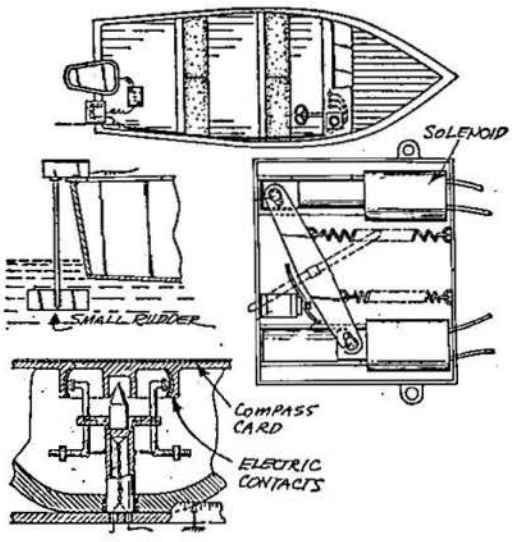

Figure 5. Patent 3,041,995. Automatic Pilot For Outboards

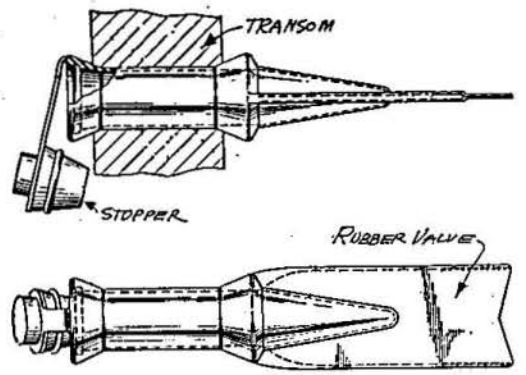

Figure 6. Patent 3,049,088. Drain Plug And Valve

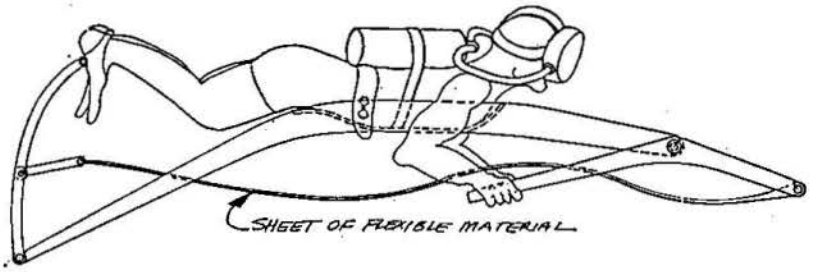

Figure 8. Patent 3,048,141. Oscillating Propulsion Device

storage battery supplies necessary power for the simple system.

Have you ever seen one of those Bronx-cheer rubber tubes kids used to make derogatory noises? They are a rubber tube, flattened at one end. When you blow in the tube, the flattened end vibrates and makes a raucous noise.

The boat drain patented by Gerald J. Curtis, 8806 Glen Loch, Houston, Texas, is patterned after the humble Bronx-cheer device. The drawings in Figure 6 show the drain to be a molded rubber tube passing through the transom and flattened on the outer end. The boat's forward motion and bow high position force bilge water out through the rubber bailer. When the boat stops dead, water is prevented from flowing back into the boat by pressure flattening the rubber tube. A stopper is provided to plug the drain when the boat is left floating unattended.

The Gray Marine Motor Company is assignee of a patent covering the water cooled exhaust elbow shown in Figure 7, invented by Jack R. Bartlow, Detroit, Michigan.

Bartlow points out that marine exhaust pipes are generally cooled by vaporization of cooling water emptied into the pipe at the exhaust header. However, at low speed, speeds just above idling, gas velocity is low, water flow is non-turbulent, consequently cooling is poor and rubber hose connections in the exhaust may be scorched or burned.

The heart of Bartlow's invention is a raised bead or ring cast or welded inside the exhaust elbow. The bead increases gas velocity; greater velocity greatly encourages rapid evaporation of water within the passage. The bead also tends to throw flowing water up into the exhaust gas stream and to slice water off the bead's edge. Net effect is decrease of exhaust gas temperature.

The principle of the invention shown in Figure 8 is that of wind waving a flag, excepting that in this turnabout the waving flag is making a wind. The inventor of this propulsion principle is John E. Fisk, 1408 Golden Gate Blvd., Mayfield Heights, Ohio. Inventor Fisk states he is adapting and mechanizing the propulsive method of snakes, fish, lizards and alligators.

In his patent, Fisk tells how a flexible sheet of material, caused to undulate by a power source will cause a rearward flow of fluid; the reaction will move a boat or vehicle ahead. His principle applied to a simple frame

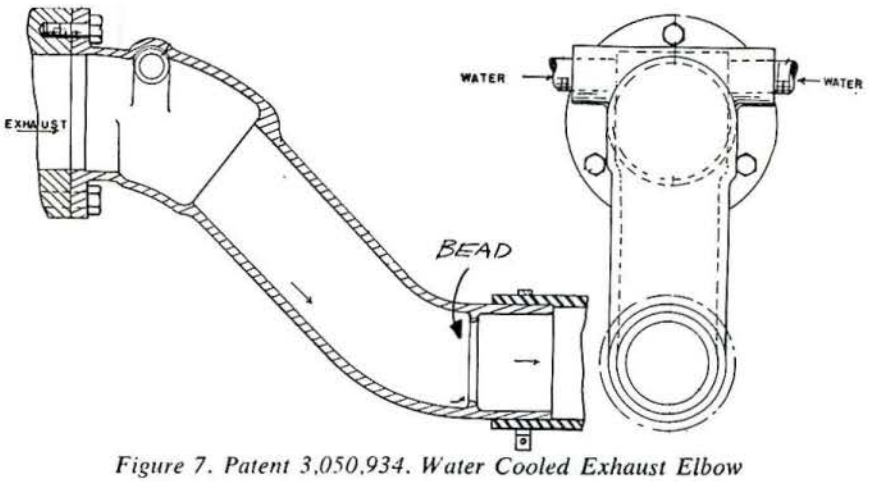

Figure 7. Patent 3,050,934. Water Cooled Exhaust Elbow

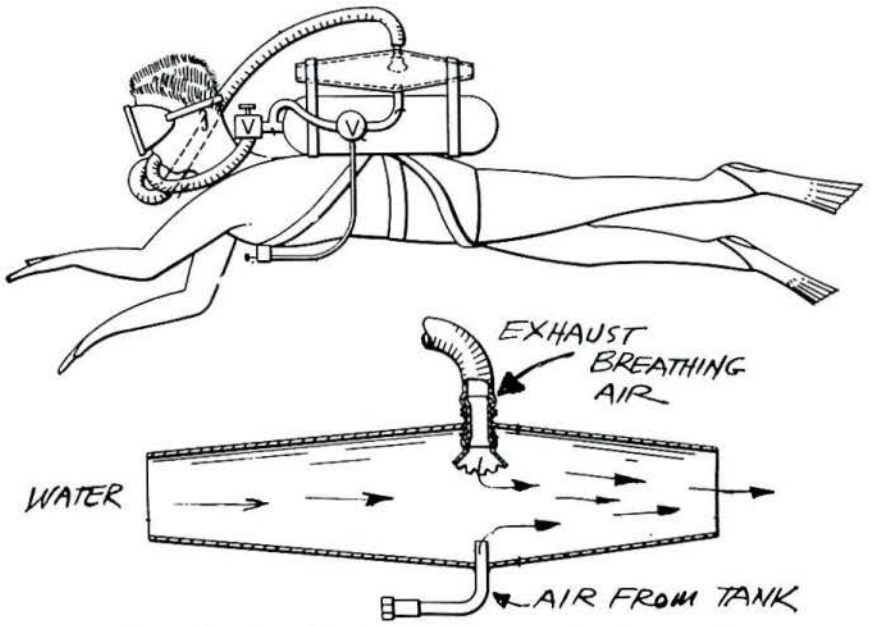

Figure 9. Patent 3,048,140. Underwater Ram Jet Engine

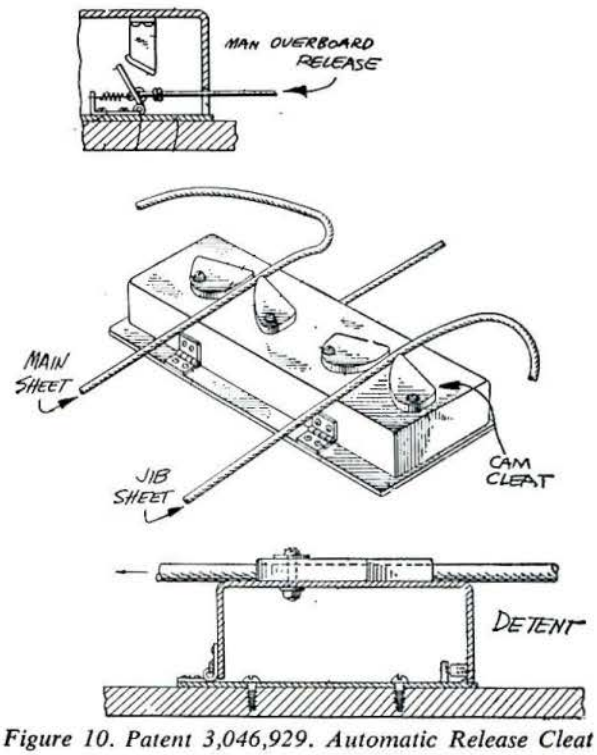

Figure 10. Patent 3,046,929. Automatic Release Cleat

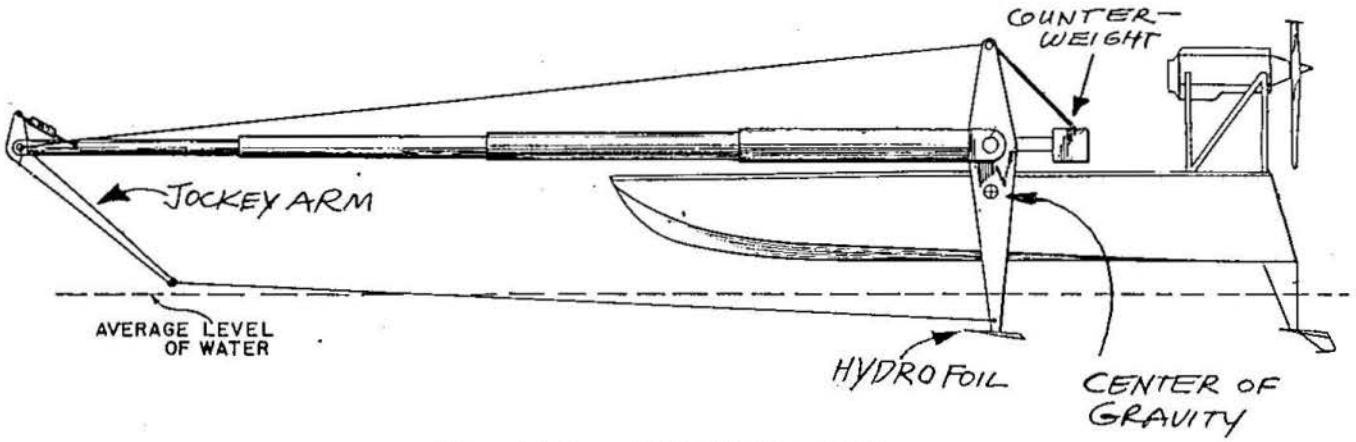

Figure 11. Patent 3,046,927. Hydrofoil Boat

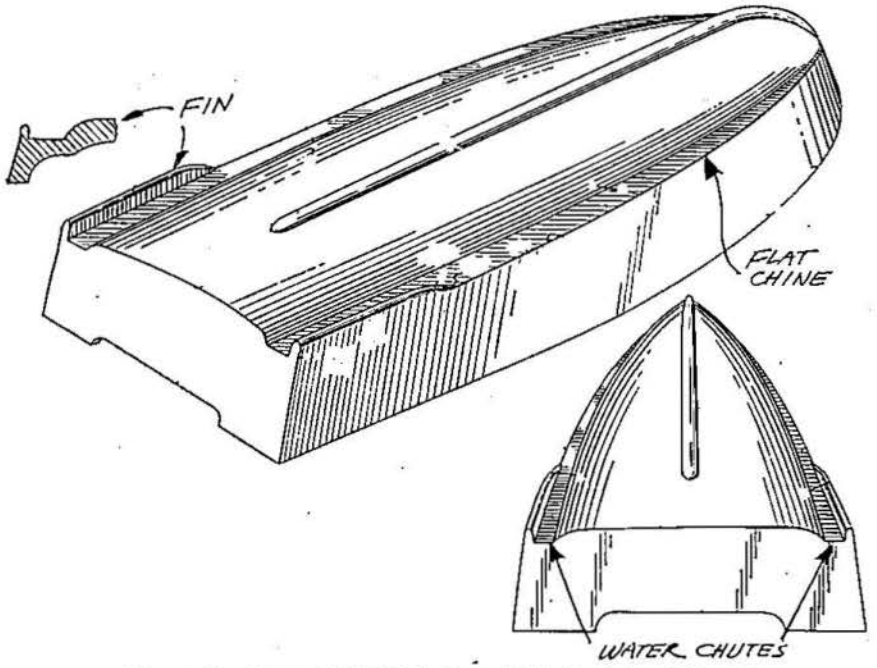

Figure 12. Patent 3,045,629. Boat Hull Resisting Side Slip

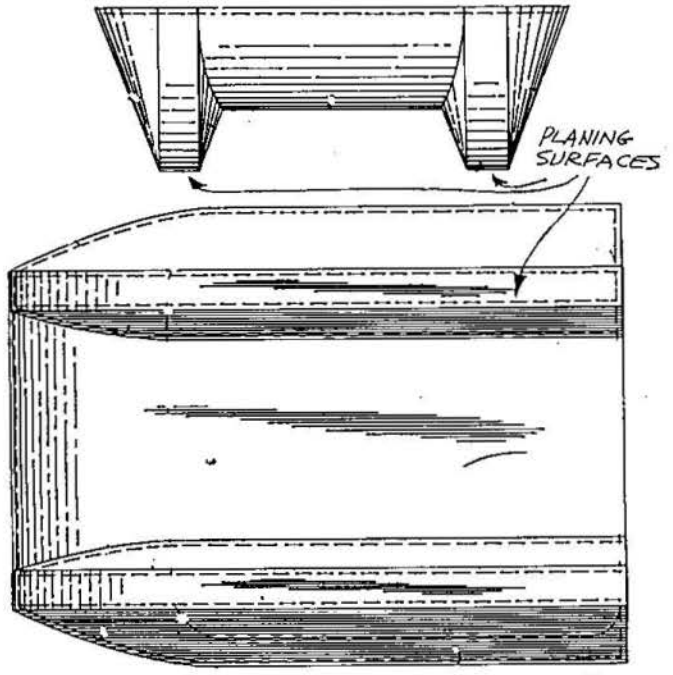

Figure 13. Patent 3,046,926. Planing Boat Hull

"boat" for a skin diver is shown in the drawings. It is pointed out that the principle may be utilized to drive underwater craft, conventional boats or even airplanes. It would be fun to build an experimental craft using this invention.

Another invention relating to skin divers is the underwater ram jet engine shown in Figure 9 and invented by Eugene R. Davis of Jay, New York. The ram jet gets its energy from the skin diver's compressed air supply, supplemented by exhaust breathing air. Speed is controlled by a manually operated valve.

To start the ram jet, the diver swims ahead or is towed a short distance. Forward motion forces water through the engine; air is injected at the point of greatest static pressure; resulting foam and bubbles create higher exit velocity than inlet velocity, and thrust is developed. The swimmer can relax and allow engine thrust to propel him forward.

"Automatic Release Cleat For Sailboats," is the title of a patent issued to Arthur Piver, 344 Sacramento Street, San Francisco 11, California. The invention consists of one or more ordinary cam cleats mounted on a hinged box shown in Figure 10. The box is kept flat on the deck by spring loaded detent. However, if rope pull exceeds preset tension the detent lets go; the box tips up on its hinges and the ropes are released.

The automatic release cleat may be fitted with a "man-overboard" line, a line trailing the boat and arranged to trip the release if given a yank by a man overboard. Inventor Piver cites that his invention is particularly useful for cleating sheets on a catamaran. Some cats are so stiff they can be dismasted or damaged by high wind and gusts. The automatic release cleat

Continued on page 68

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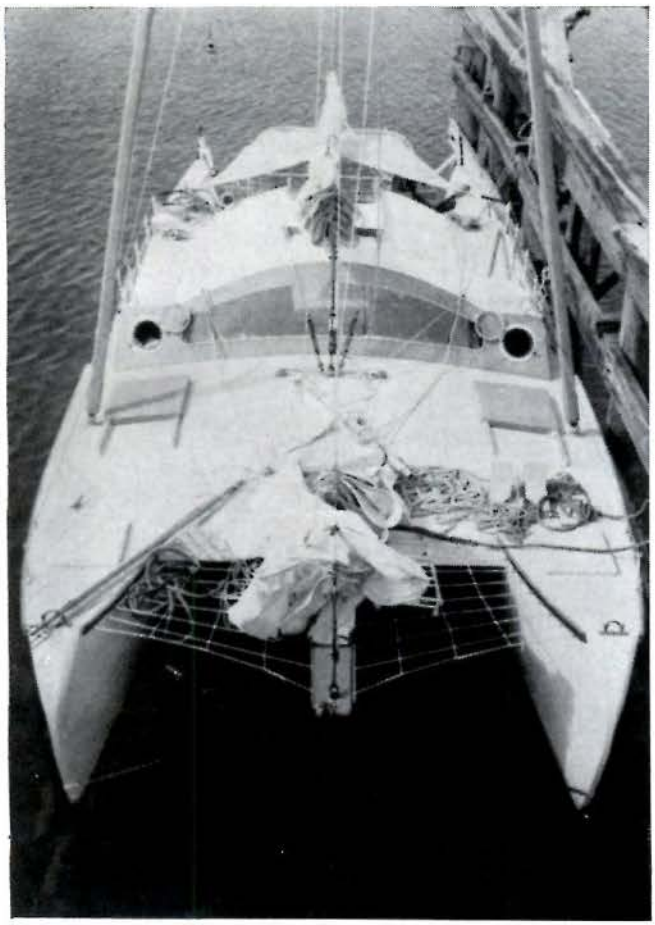
The Cruising Catamaran

by Friedrich B. Goeller



Tapatai, Mr. Goeller's second catamaran, is thirty-two feet long

Building and living aboard a modern multi-hull cruising boat

PRIOR TO MANU KAI making headlines in the boating magazines, I had thought of catamarans only in terms of small, racy craft that could provide the sailor with a thrilling ride over whitecapped waters on a windy afternoon or at best with a weekend cruise using the sail for an improvised canvas shelter on a dewy night.

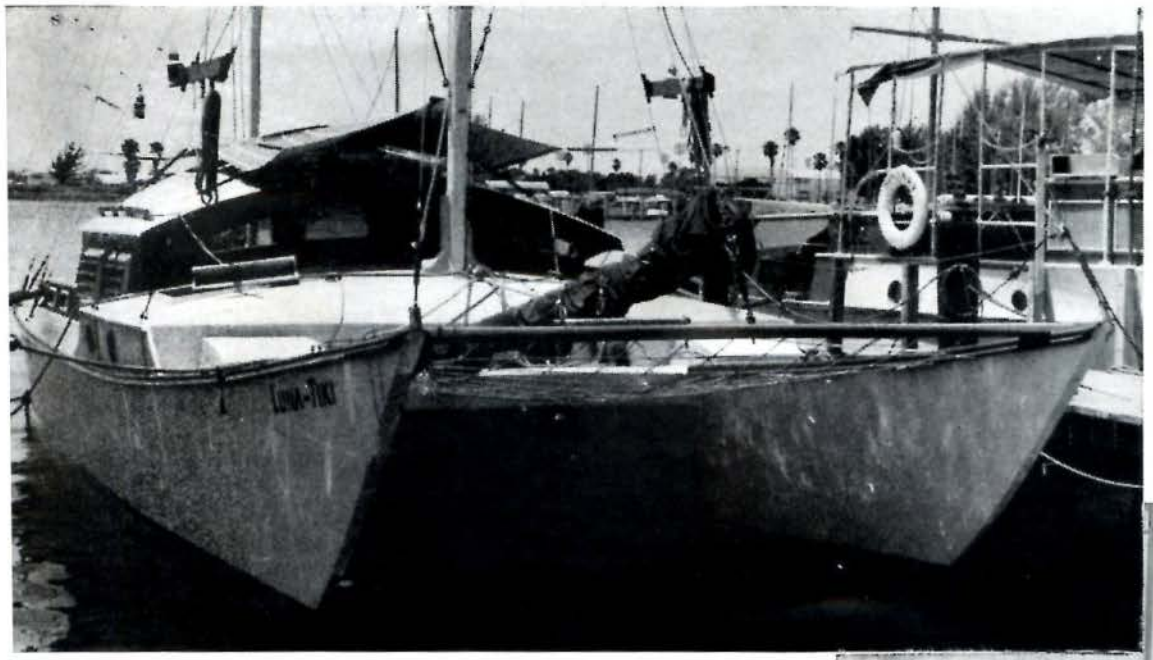
I have designed and built small catamarans and outriggers as far back as the thirties and many a time attracted the attention and awe of dyed-in-the-wool single hull sailors when I sailed through squalls and rough water with my "weird contraptions" when bigger boats doused their sails and motored home.

Sure, I had known of Eric de Bisschop who sailed his forty-five-foot catamaran Kaimiloa from Honolulu around Africa to Cannes, France in 1937—39 where the outbreak of World War II terminated the intended circumnavigation, and de Bisschop joined the French Air Force.

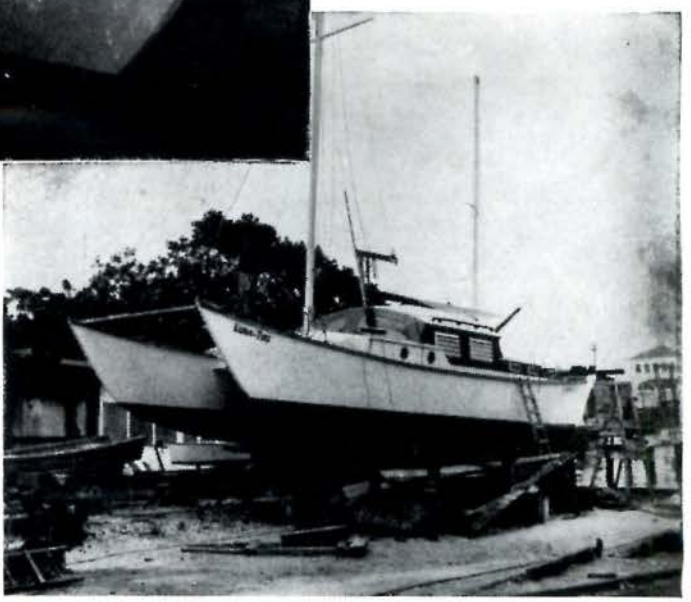
But de Bisschop's Kaimiloa seemed to me only double trouble. She was built of two narrow double-ended boats of heavy, conventional construction, joined together with heavy timbers, chains and turnbuckles, and afforded neither exceptional comfort in her Quonset hut-like shelter cabin on the bridge-deck, nor could she boast of unusual speed, her average being the conventional 100 miles per day, accepted as norm for long ocean passages.

Her sail area, carried in a sampan-style schooner rig, was small. Each square foot of sail had to push too many pounds of boat to produce the speeds commonly associated with our modern, light, stressed-skin construction catamarans. That she was seaworthy nobody can deny, since she arrived in Cannes in good shape, with her crew all well, after weathering many storms on her voyage.

(Eric de Bisschop, French adventurer-scientist-sailor, age sixty-six, lost his life in 1958 when his transpacific raft Tahiti Nui II was wrecked at Rakahanga, Cook Islands, after a four-and-a-half months journey from Peru.)



Two views of Luna-Tiki. She was Mr. Goeller's first catamaran and is thirty-nine feet long



Since Kaimiloa awakened no inspiration for designing a catamaran for living aboard and cruising, I bought a thirty-two foot fishing schooner which I converted into a yacht, built a catamaran dinghy, and for a while was happy with both of them. I cruised with my schooner Takahea and enjoyed the thrill of a fast dash under sail with the little cat, named Fun-Cat.

By the time articles about Manu Kai appeared in the various magazines, I had become dissatisfied with the cramped quarters on Takahea and her slow turn of speed, and my thoughts turned irresistibly toward a large cruising cat which would give me not only all the comforts of home, but also the thrill of fast sailing I enjoyed so much with the little Fun-Cat. My requirements were many and not easily incorporated in one boat. She had to be roomy, have enough displacement to house all the thousand things necessary for living aboard, yet she had to be light to be fast.

Her sail area had to be moderate and easily handled for a short crew of two, but powerful enough to drive her at a good clip. The ketch rig seemed a natural.

Since I live in Florida where the water is spread thin, she had to have shallow draft yet be as weatherly as any cruiser of her size. Since I dislike troublesome, space-robbing centerboards I adopted the ancient, Polynesian principle of an asymmetrical hull design to provide lift to windward. Further she had to be seaworthy, as vicious squalls haunt the Gulf of Mexico all summer long only to be exchanged for nasty southwesters and blustery northwesters in the winter. (To appease the Chamber of Commerce: we do have some wonderful weather too, the best cruising time being spring and fall.)

If my cruising cat could come up to all these demands, I would have a boat boasting many advantages over her single-hulled sister.

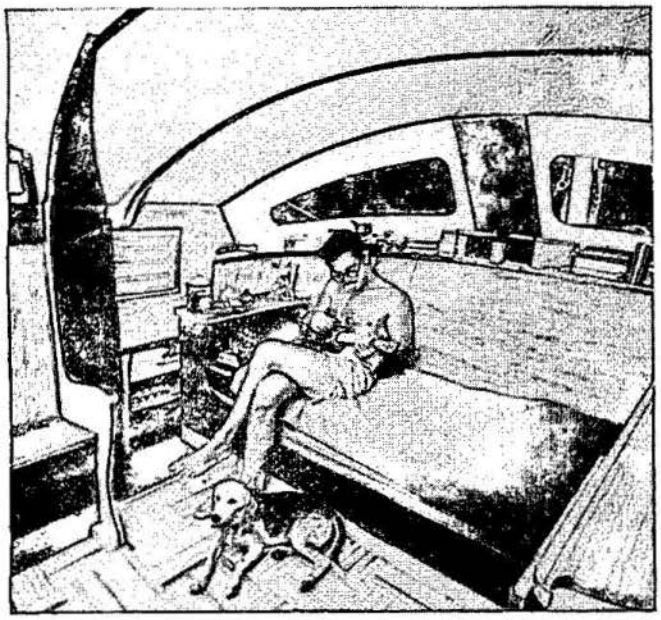
Two fifteen-foot models of different design were built and thoroughly tested in all kinds of weather, and after one of them proved superior, work on the full scale boat began.

A little over a year later Luna-Tiki was launched. She was 39 feet 3 inches overall, 31 feet 6 inches on the water, had 14 feet 9 inches beam and drew 26 inches of water. Luna-Tiki had room to spare; two double staterooms forward, the bunks located in the bridge-deck between the hulls, a roomy main cabin 8 feet by 12 feet with 5 feet 9 inches headroom, a spacious head in the port hull, a large, handy galley to starboard and two after cabins, one rigged as an art studio for my wife, the other containing a tool and workshop for myself.

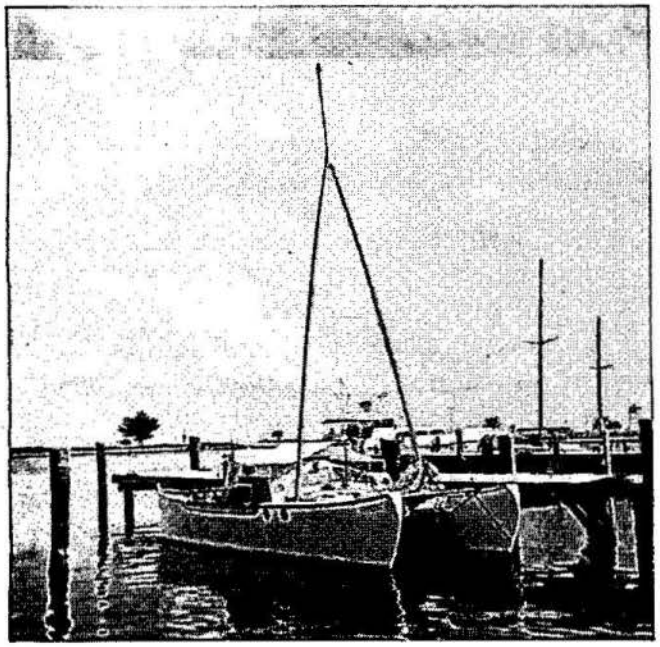
The thirty-two foot schooner Takahea hauled out in Florida

The whole family was delighted with the boat, my wife Flo, myself, Foundy (I found her) the dog, and Hemise (half Siamese) the cat.

An extended four months cruise during the winter of 1957-58 proved her value in every respect. It turned out to be an especially stormy season which produced many severe gales. During this gale where the wind whipped up to seventy-three miles an hour we were tied up at Bahia-Mar,



The author in the main cabin of Tapatai



Tapatai has a wishbone mast to spread the strain to both hulls

Fort Lauderdale and watched with awe the single-hulls heel way over under bare poles from our own level riding craft.

In the Keys and 10,000 Islands, off the beaten track, we had our share of running aground (the less one draws the more chances one takes), but now it was only a matter of getting wet a little over our knees, instead of over our heads, when pushing her off, which was particularly appreciated in the chill waters during that winter.

We could beachcomb at remote places where we would tie Luna-Tiki to the mangroves and run a gangplank ashore without worrying that the outgoing tide would leave her on her beam ends.

Luna-Tiki's sailing qualities were good. She never refused to come about in winds up to twenty-five miles an hour. She would move in a zephyr and behave like a lady in a blow.

Since she was fiber glass covered all over, including the masts, she required a minimum of maintenance. She was tight as a drum and didn't leak a drop from either above or below.

An underwater window afforded much pleasure in the Florida Keys when the water was not too stirred up by the almost continuous storms.

The built-in thermo and reflective insulation kept the interior cool on hot days and snug and cozy when it was blowing and cold. It also eliminated condensation which used to gather over my bunk on Takahea, and which used to wake me with a start with its persistent drip.

All in all Luna-Tiki appeared to be the ideal cruising boat—but—the human mind is never at rest. She just wasn't my size; she was too big.

Sometimes when I tried to dock her the slips just weren't

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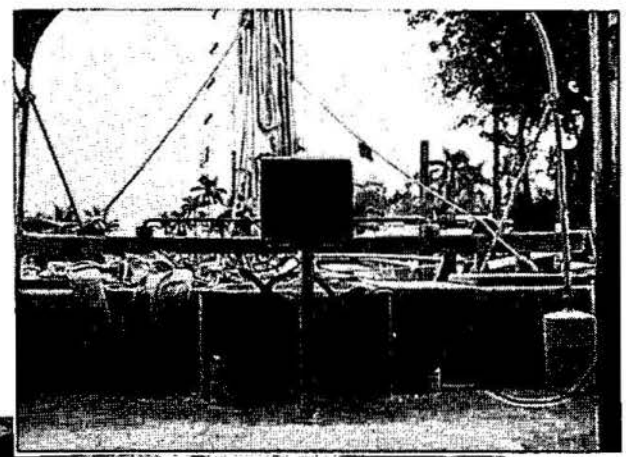
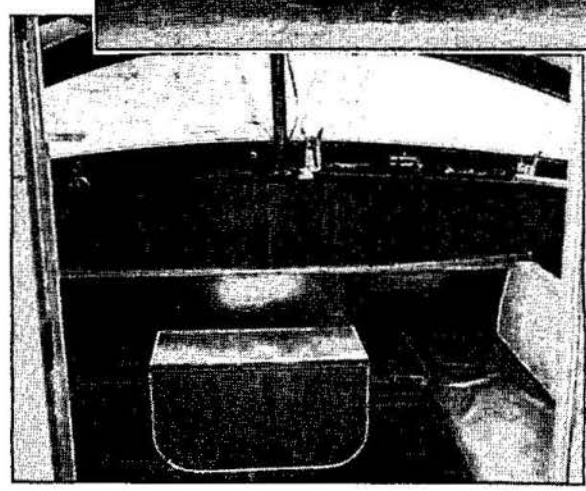
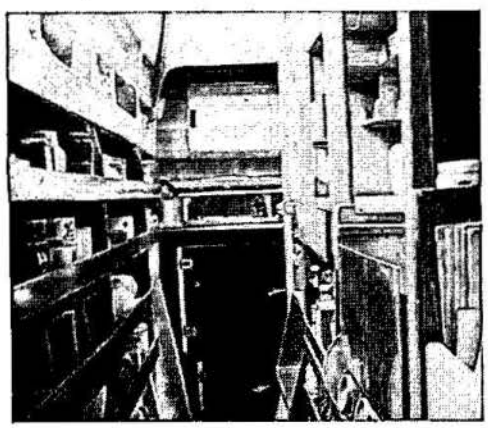
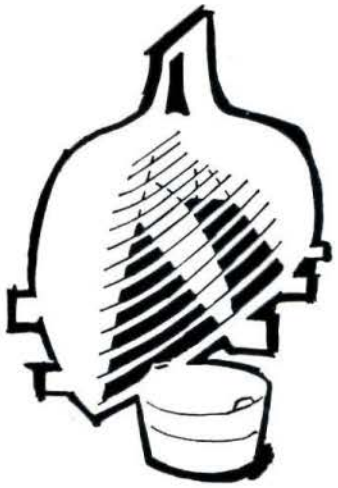






Left, inside the galley of Tapatai while to the right is her main cabin and, above, her huge cockpit

FIBERGLASS BOAT *building*



PART II

by Peter R. Smyth

NOW THAT the mold is complete, the actual molding of the boat can be undertaken. Like all the other steps in building a fiber glass boat, this process has both good and bad sides. The good part is that it is fast. The twenty-four footer took four men only seven hours for the whole layup. The bad part is that the resins used are sticky, smell to high heaven, and are without doubt some of the most repulsive things to work with ever invented, while bits of the fiber glass work themselves into your clothing and make you scratch as if you had the seven year itch. However, it is all over in a hurry, which is one thing to be thankful for.

Laying up the boat. Man on left is rolling on resin while other man is removing air from the overlap at the knee.

Before we get into the molding process itself, a description of what fiber glass reinforced plastic actually is is in order: In an engineering sense, fiber glass reinforced plastic (FRP) is exactly the same as reinforced concrete. That is, a solid material (the concrete or resin) that is very capable of handling a compression load is interlaced with a material (the steel or fiber glass) that has a very high tensile strength. The two materials combined make a material that has all the best properties of both. To illustrate how close *reinforced concrete* and FRP are together, experiments are now going on to make fiber glass reinforced concrete, steel reinforced plastic, and a seagoing version of reinforced concrete is on the market in Australia. Other reinforcing materials are also being developed. Leading the pack is Union Carbide's Dynel. However, FRP is a proven material and the best, so far, for our use.

A short course in chemistry is also in order so that you better understand the materials with which you will be working and thus less likely to make mistakes. Plastics can be divided into two groups; thermoplastic and thermosetting. Lucite (an acrylic) is an example of the first group as are all the vinyls. Thermoplastic simply means that they can be softened by heat and usually are soluble. Thermosetting

Laying up the boat. Man on left is overlapping the glass cloth at the stem while other man is using squeeging out the excess resin

plastics are typified by the phenolics (Bakelite) and all of the resins used in boat construction. These resins, when once activated by real or chemical heat, polymerize (cure, or harden) into a rigid, insoluble material. Up until the war, all thermosetting plastics required great pressure as well as heat to cure them. The polyesters were discovered early in the war to meet the need of a thermosetting material that could be cured at room temperature and with only contact pressure or no pressure at all. This was successfully accomplished and made the building of such large objects as boat hulls practical.

The word polymerization needs a bit of explanation. Webster defines it as "the joining together of two molecules" and this is exactly what it is. Imagine if you will, instead of a pot full of liquid resin, you have a pot full of billions of minute centipedes all slithering around each other. Now, upon the addition of an activator (the catalyst) all these centipedes get excited and start holding hands, or feet as it were. As more and more link up, the mass becomes more and more rigid until, at last, every hand is being held and the whole thing is as hard as a rock. To carry the analogy one step farther, you'd imagine that since the catalyst has the effect it does, more activator would excite the little fellows even more and speed up the cross-linking. This is exactly the case. A small variation in the amount of catalyst as well as a variation in the temperature, and the amount of sunlight will materially change the reaction speed, or the so-called gel time.

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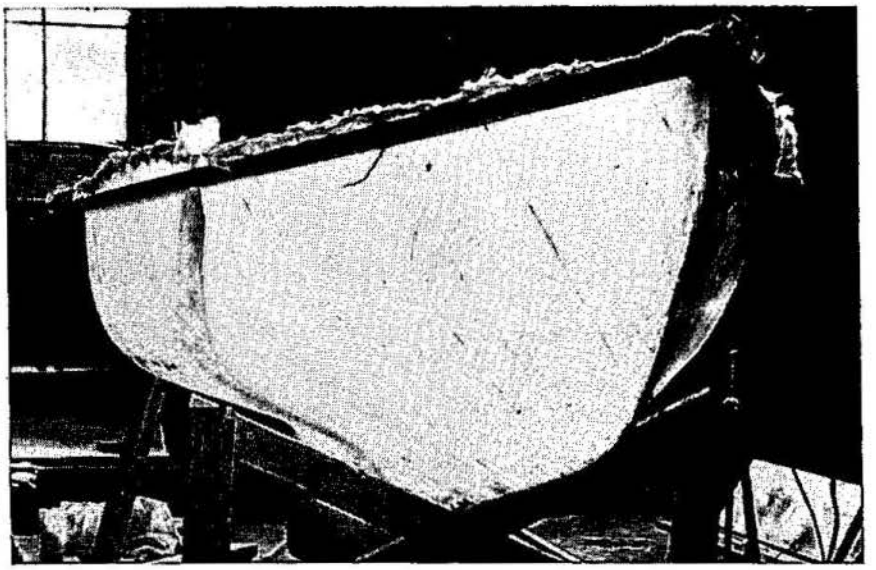
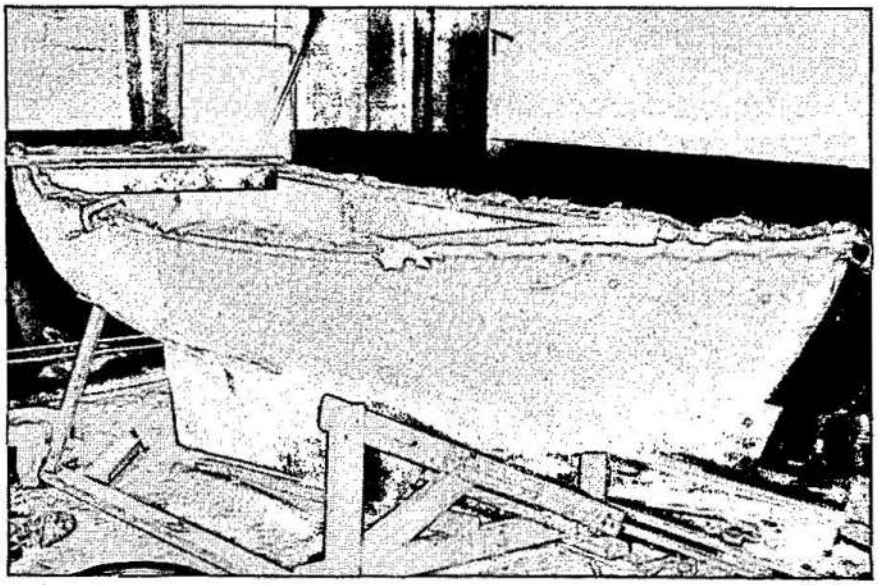


Two views of the fiber glass shell of Flea, just after it was removed from the mold. Some temporary bracing has been inserted to keep the shell in shape, but the sheer line has not been trimmed



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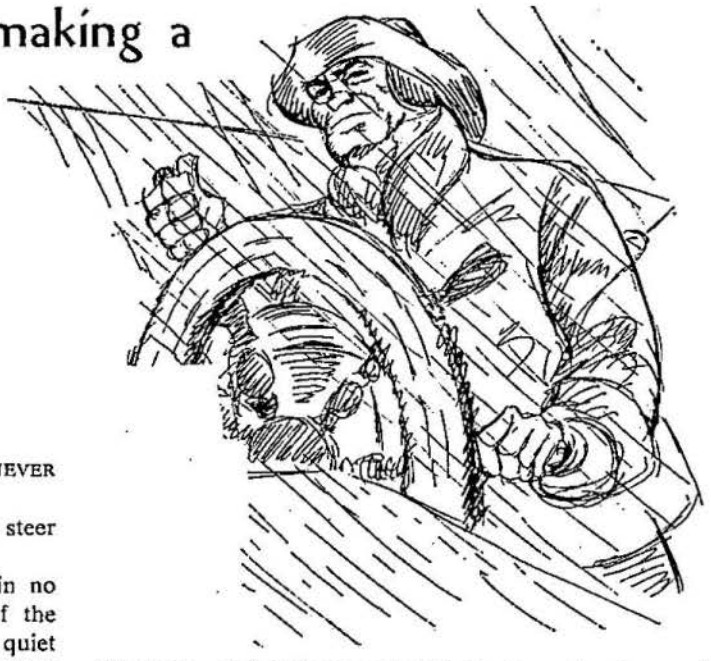
on the almost-lost art of making a

SHIP'S WHEEL



BREATHES THERE A MAN WITH SOUL SO DEAD, WHO NEVER TO HIMSELF HAS SAID:

"By golly . . . I wonder what it would be like to steer this boat with a real ship's wheel?"

Hastily, we must state that the above question is in no way meant to diminish the functional importance of the tiller by implication, nor of its ease of operation in a quiet breeze. Rather, then, it is meant to illustrate a thought that must surely have crossed the minds of all men who sail boats at one time or another. The tiller is most certainly beyond criticism . . . but the feel of a *wheel* is a sensation that enables the mind to conjure up pleasant, literary remembrances of things past . . . particularly things dealt with by Conrad, Melville, Dana and a salty host of others. On a bright day, offshore, with nothing but blue enveloping you above and below, it is not difficult at all to become the man at the wheel on anything from an eighteenth century privateer to a lumbering New Bedford whaler.

Making your own ship's wheel is not as complex as it might seem at first blush if you own, or have access to, a small shop.

First, it must be noted that paper templates for all the components are a decided "must"; such patterns should be made actual size and with extreme accuracy, but the initial trouble will save much heartache and headache.

In the cutaway drawing at the lower left, the placement of spokes, dividers between the spokes, and rim covering pieces is easily apparent.

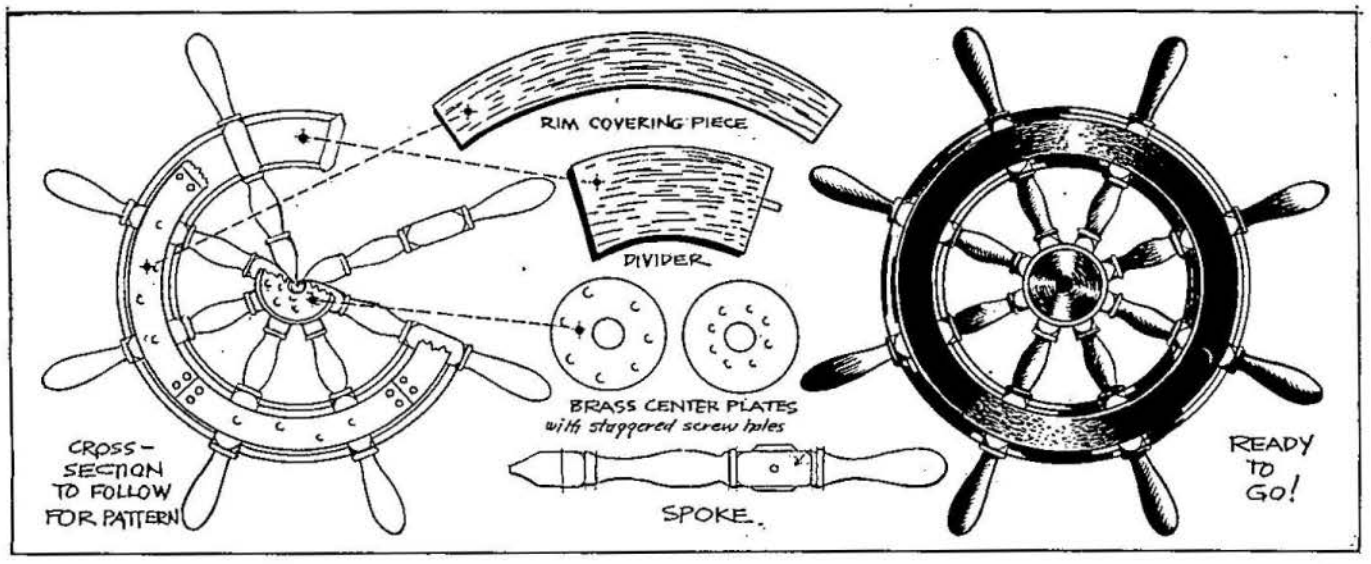
A 30-inch wheel is suggested, with eight spokes. This measurement is based on the distance from spoke tip to spoke tip across the diameter. Any size wheel can be made, of course, and it is suggested that six spokes be used on smaller sizes.

Black walnut is the best wood to use for the spokes, since it is tough, and is of a dark, rich color. Don't tackle it with a hand saw, however; the stuff is tough! Mahogany should be used for the covering rim pieces, and for the dividers. Rim pieces can be of any thickness you desire; a thickness of an inch and three quarters is desirable for the dividers.

At the wheel's hub, where the spokes converge, two brass plates are used as cover. They should be of 3/16 inch thickness, and 3½ inches in diameter. Be sure to stagger the screw holes to prevent the screws from meeting head-on as they are inserted.

The adherent is casein glue, and ⅜ inch dowels are used for fasteners between dividers and spokes. Use enough glue to permit a slight seepage when edges are joined, but wipe it all away before you finish. Casein glue is hard to remove once it has set and can discolor the wood. Use a mahogany filler before you varnish.

Once completed, your wheel will be a handsome conversation piece for your craft, and permit unlimited imaginative cruising back through the centuries. But don't get carried away. Piracy is still illegal.



THE RUDDER

Royal Tour

In our July issue we were pleased to be able to report that our "Tour of Europe for Yachtsmen" had been a resounding success. In that issue we also promised you the opportunity to join us "next year"!

So here we are with the 1963 tour folder which we will gladly send you on request.

Departure date April 27th returning May 19th. The members of the 1962 tour told us that we should call it the "*Royal* Tour of Europe for Yachtsmen." We hope you will not mind the fact that we have complied with this suggestion.

You see—this is truly a Royal tour! Not only are we royally welcomed by the Royal Yacht Clubs of Holland, Denmark, Greece and Monaco—but the hotels are the best of each country; the food served a result of the proudest cooking of each city visited, etcetera.

Again we have chartered the luxurious *Juanita*. We have also chartered the *Illyris*, one of the finest and most beautiful yachts in the Mediterranean. We are giving more time to sailing and we are also leaving one month later, in order to avoid those snow storms in Copenhagen.

You will find our itinerary very well balanced and allowing for many things: first and foremost, the pleasure of being a luxurious yacht, sailing through the most beautiful archipelago in the world; the fun of sharing ideas and thoughts with yachtsmen of many countries; the satisfaction of seeing craftsmanship, passed on through generations, at yacht building yards in Holland and Denmark; the delight of fabulous food and drink starting with the smorgasbord of Denmark, down to the exotic foods of Greece.

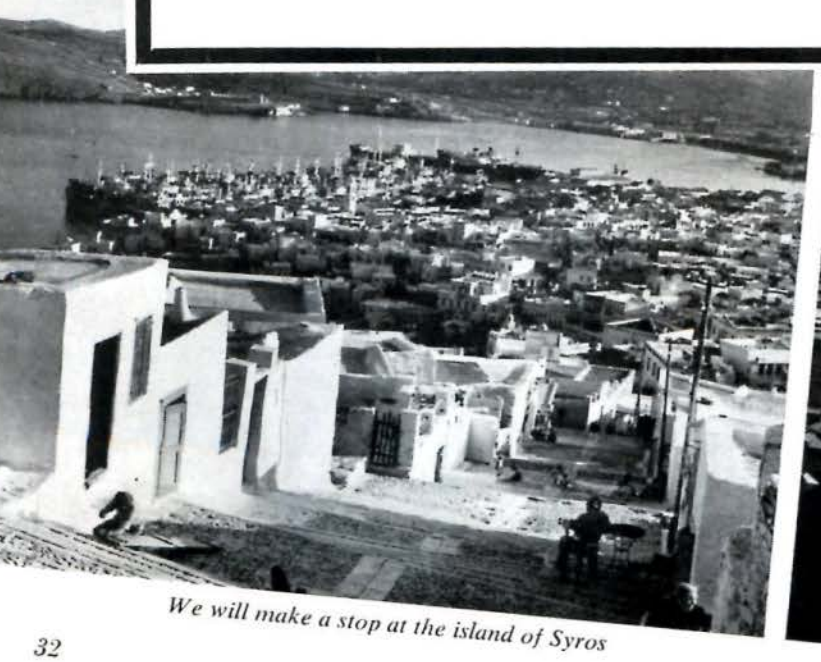
Do not miss the opportunity of joining us—and believe us when we say it is an opportunity. The Royal Tour of Europe (and the Greek Islands) for Yachtsmen will be an unforgettable experience, an experience which can be yours through The Rudder Magazine.

With best regards,

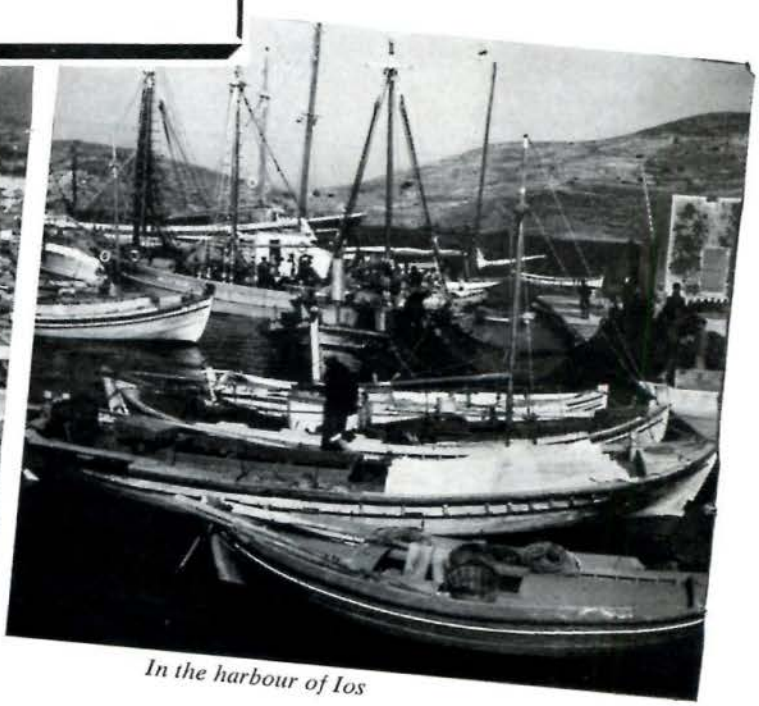
Cordially,

Ellery Mann
Publisher

The yacht building yards of Europe turn out some of the finest sailing ships in the world



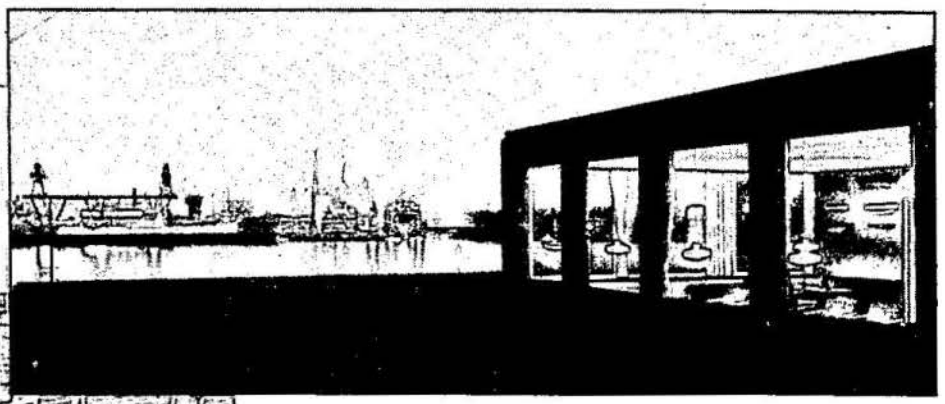
We will make a stop at the island of Syros

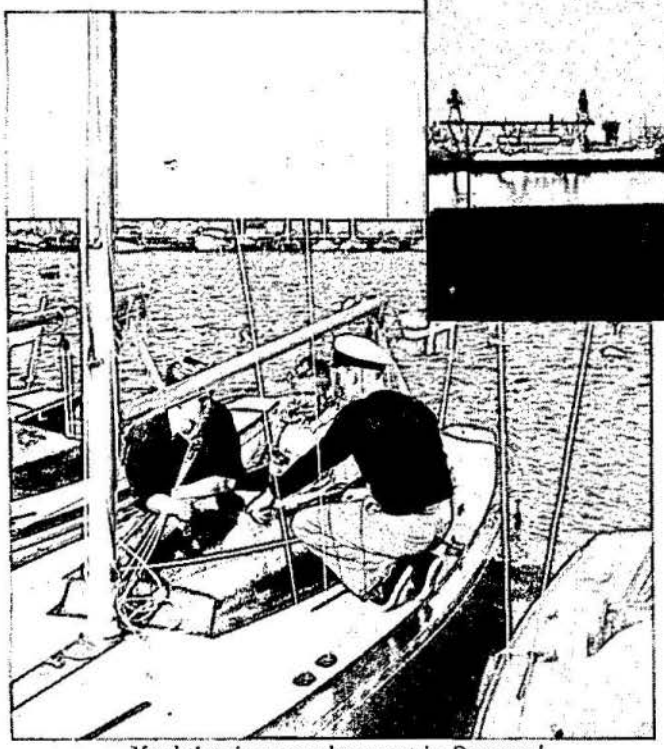


In the harbour of Ios

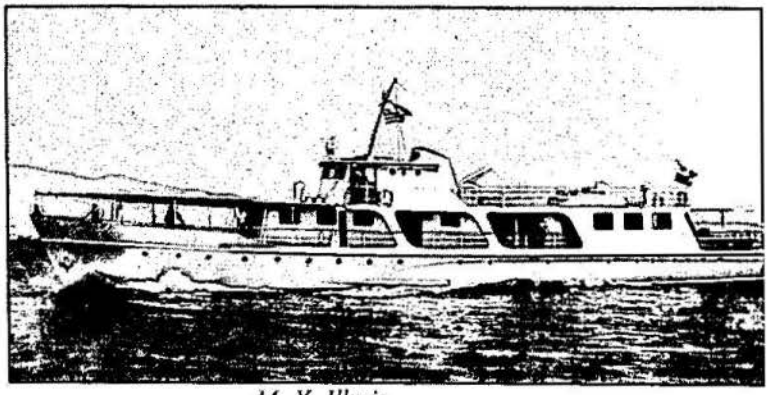
# of Europe for Yachtsmen

The Royal Danish Yacht Club is situated in the heart of Copenhagen's harbor

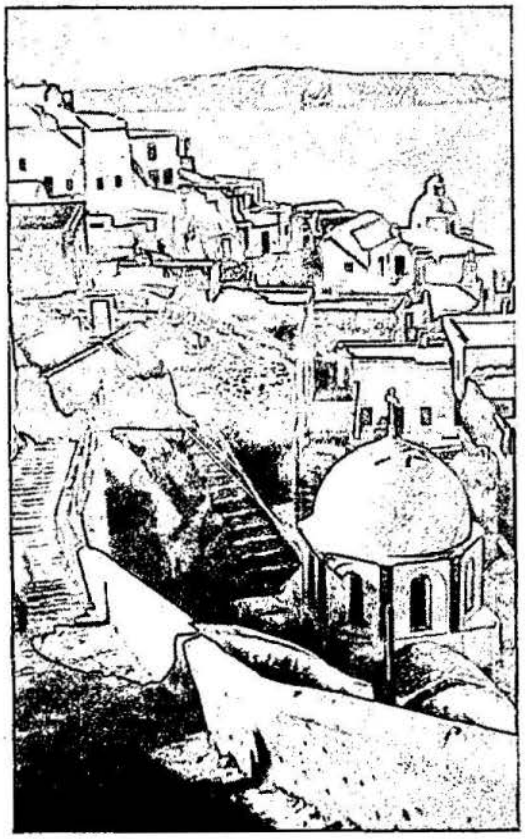




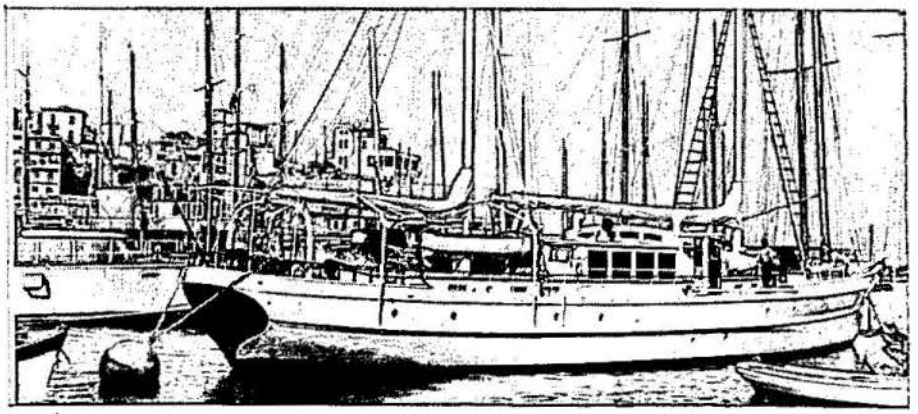
Yachting is a popular sport in Denmark



M. Y. Illyris



Thira, the capital of the island of Santorin



Motor Sailer Juanita

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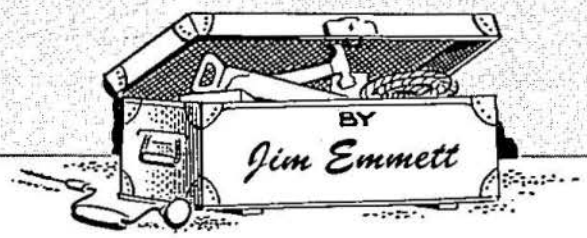
The Skipper's Toolchest

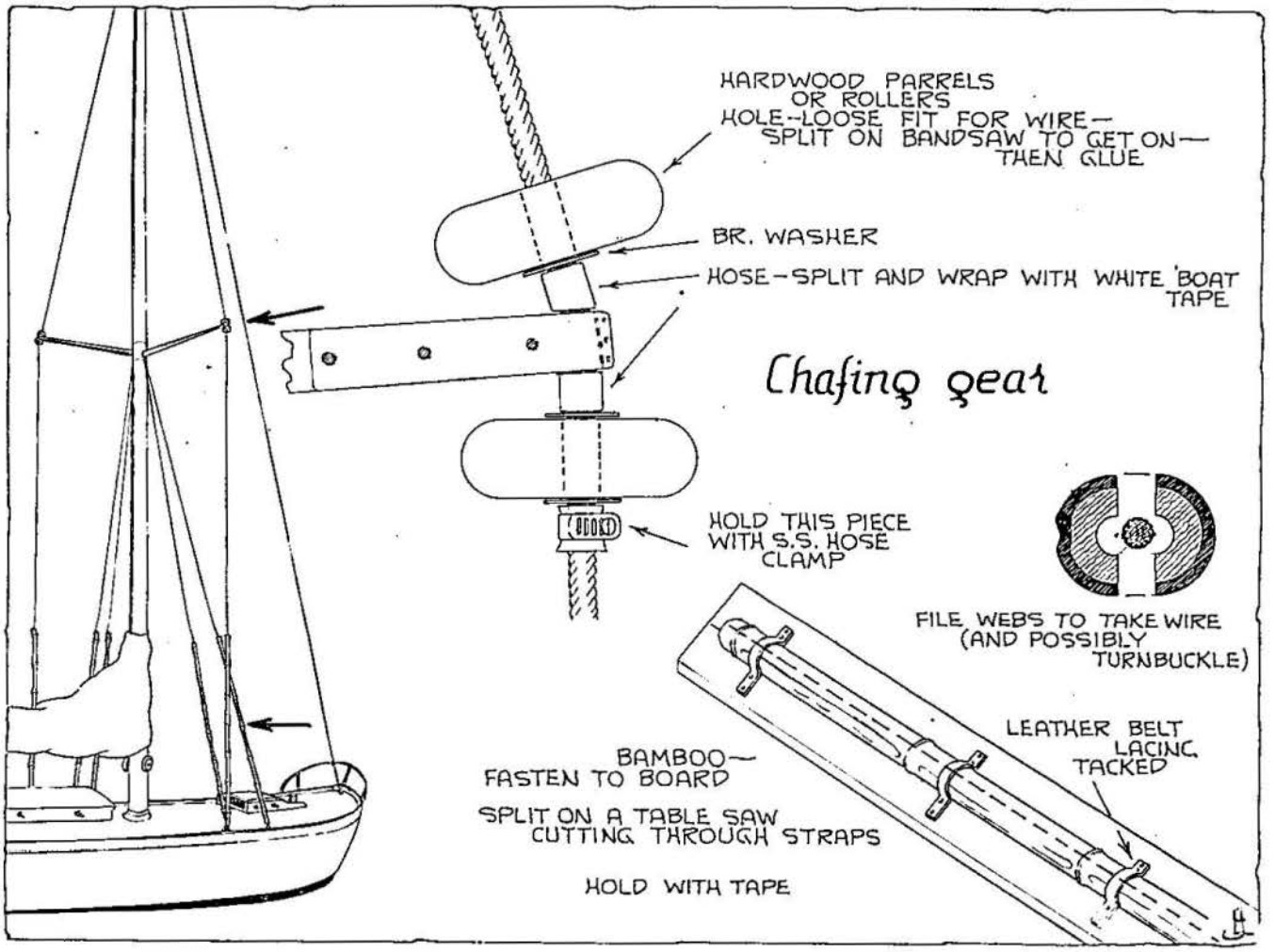
Practical Gadgets... Old and New

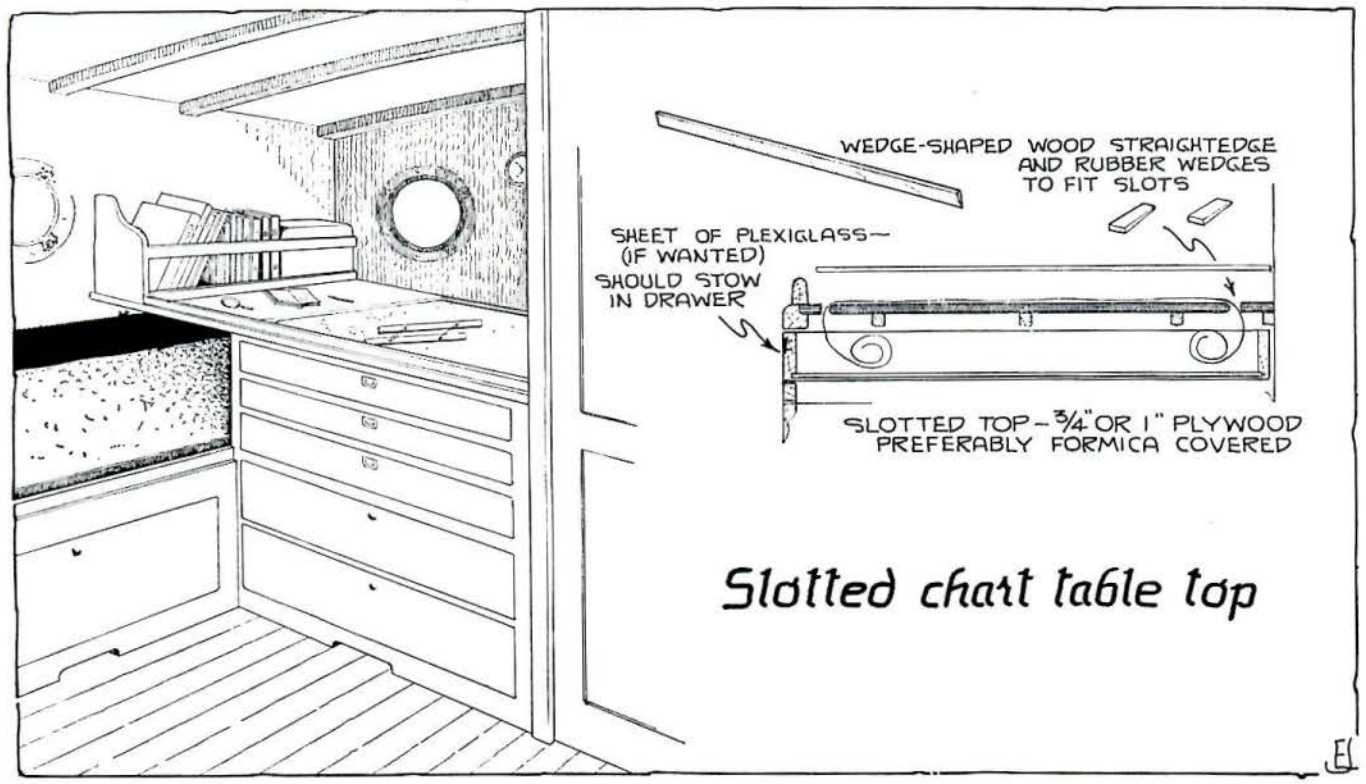


Chafing Gear

THE HARDWOOD rollers at the spreader ends shown here, as suggested by Wilbur Strong of Detroit, are, to my mind, a big improvement over the usual chafing gear. I've purposely shown the rollers on the large side: just big enough to keep the sail well clear will ordinarily suffice. The holes should be an easy fit for the wire. Wilbur's way of holding the rollers in place—after splitting them for getting on and then gluing together again—is simple and adequate.

The idea of using bamboo on the lower rigging is by no means new, but I like Wilbur's way of splitting the lengths for hollowing the webs and getting them on. The same method could be used for splitting lengths of round fir, or other wood as sold by lumber dealers. Wilbur fastened each piece in turn to a length of waste board, keeping what would be its centerline exactly parallel to the edge of the board. He used pieces of old leather belt lacing, tacked to hug the pole, although tape may be used. Anyhow, the idea is to run the board over a table saw with its fence set to put the cut down the center of the pole, cutting right through the holding straps. It was then easy to file out the webs to allow for the wire. With an ordinary wood pole a groove could be cut centrally of each flat surface by altering the saw's adjustments in making several very shallow cuts. It would be a simple matter then to glue the pole in place about the shroud. With the bamboo, Wilbur's method of using boat tape in a series of neat wrappings or servings is best.


HARDWOOD PARRELS OR ROLLERS
HOLE--LOOSE FIT FOR WIRE—
SPLIT ON BANDSAW TO GET ON—
THEN GLUE
BR. WASHER
HOSE—SPLIT AND WRAP WITH WHITE BOAT TAPE
Chafing gear
HOLD THIS PIECE WITH S.S. HOSE CLAMP
FILE WEBS TO TAKE WIRE (AND POSSIBLY TURNBUCKLE)
LEATHER BELT LACING TACKED
BAMBOO— FASTEN TO BOARD
SPLIT ON A TABLE SAW CUTTING THROUGH STRAPS
HOLD WITH TAPE


WEDGE-SHAPED WOOD STRAIGHTEDGE AND RUBBER WEDGES TO FIT SLOTS
SHEET OF PLEXIGLASS— (IF WANTED) SHOULD STOW IN DRAWER
SLOTTED TOP—¾" OR 1" PLYWOOD PREFERABLY FORMICA COVERED
Slotted chart table top

Slotted Chart Table Top

THE TWO LONG SLOTS in the top of a chart table, I noticed on a thirty-eight foot sloop. It is a simple idea and makes for easier working, especially if one keeps charts rolled. The parts not being used are kept out of the way in the drawer or space beneath the top. Naturally, the chart table should be wide enough to accommodate the chart's width, which is larger than found on the average boat. However, I've come across the same idea used aboard boats with chart tables or boards of reasonable size, say thirty inches wide. Charts were then folded twice, once each way, both for convenient stowing and to use with this slotted table top. The chart was partially unfolded—only one of the folds left in —halving its width (or its length) so that the ends could be fed through the slots to have the area needed showing. Sometimes a sheet of clear Plexiglass or Lucite is used for keeping the chart flat or possibly to protect it. But it should be a size that will stow conveniently, fit into a shallow drawer of the chart table or nook. Then one should have a pair of wedge-shaped wood rulers or straight edges and a few wedge-shaped pieces of rubber or wood for dropping into the slots and holding the chart flat and rigid.

Ladder Making Details

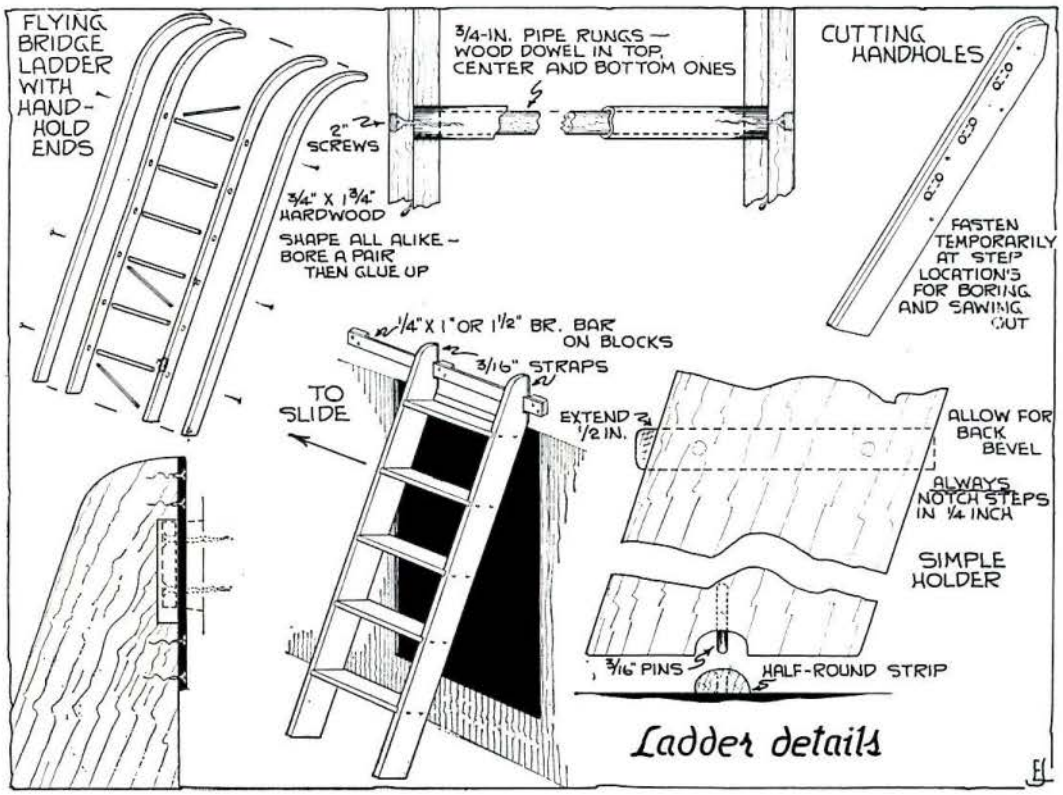
(See illustration next page)

THESE IDEAS are copied from a friend who rebuilt a husky thirty-six foot power cruiser. The wood flying bridge ladder was made to avoid the cost of having one made up of metal tubing. Naturally, it's mounted permanently against the after end of the deckhouse to permit reaching the outside steering station installed aloft. The construction as shown was not difficult, and the ladder has proved strong and convenient to use. Also, it is well proportioned and not at all cumbersome looking.

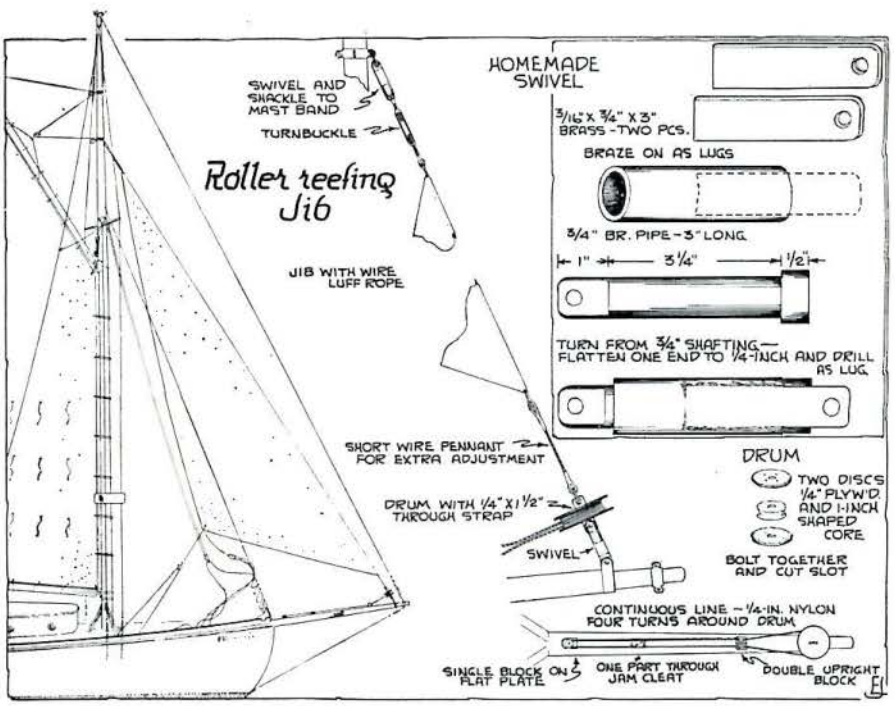
The sliding ladder permits getting into the engine compartment beneath the deckhouse floor, making it unnecessary to always lift the floor hatches for quick access to the engine and storage bins built in there. Note that no holders are used on the lower end. Simply hanging the ladder from the stout slide, made of ¼ by 1½ inch brass strap stock, has been found satisfactory on all counts. Another short ladder in the after stateroom does have its lower end held by lengths of ¼-inch rod projecting into cutouts. These drop into matching holes in a short length of half-round teak secured to the floor in the way of the ladder.

Ladder handholes, if required, are best cut as shown, Bill reports. The two shaped sides were temporarily fastened together by a few screws driven where the notches for the steps would later be cut. After laying out the shape of the slots, the pair of end holes for each were bored on a drill press. These were then connected, using a bayonet saw, and finally the parts separated for rounding the edges of the slots and sanding smooth.

As Bill emphasizes, the strength and stiffness of any ladder is largely dependent on the notches cut to take the ends of the steps. Have these a *tight, tapping* fit and use long screws for fastening into the end grain. The stock for the steps should be wide enough so that the back can be bevelled flush—this after fastening. At the front allow the step to extend slightly and round off neatly, using a chisel to hollow cut the ends flush into the uprights.


FLYING BRIDGE LADDER WITH HAND-HOLD ENDS
3/4-IN. PIPE RUNGS — WOOD DOWEL IN TOP, CENTER AND BOTTOM ONES
CUTTING HANDHOLES
2" SCREWS
3/4" X 1 3/4" HARDWOOD
SHAPE ALL ALIKE — BORE A PAIR THEN GLUE UP
FASTEN TEMPORARILY AT STEP LOCATIONS FOR BORING AND SAWING OUT
1/4" X 1" OR 1 1/2" BR. BAR ON BLOCKS
3/16" STRAPS
TO SLIDE
EXTEND 1/2 IN.
ALLOW FOR BACK BEVEL
ALWAYS NOTCH STEPS IN 1/4 INCH
SIMPLE HOLDER
3/16" PINS
HALF-ROUND STRIP
Ladder details

Roller Reefing The Jib


SWIVEL AND SHACKLE TO MAST BAND
TURNBUCKLE
Roller reefing Jib
JIB WITH WIRE LUFF ROPE
HOMEMADE SWIVEL
3/16" X 3/4" X 3" BRASS - TWO PCS.
BRAZE ON AS LUGS
3/4" BR. PIPE - 3" LONG
1"
3 1/4"
1/2"
TURN FROM 3/8" SHAFTING — FLATTEN ONE END TO 1/4-INCH AND DRILL AS LUG
SHORT WIRE PENNANT FOR EXTRA ADJUSTMENT
DRUM
TWO DISCS 1/4" PLYW'D AND 1-INCH SHAPED CORE
BOLT TOGETHER AND CUT SLOT
DRUM WITH 1/4" X 1 1/2" THROUGH STRAP
SWIVEL
CONTINUOUS LINE - 1/4-IN. NYLON FOUR TURNS AROUND DRUM
SINGLE BLOCK ON FLAT PLATE
ONE PART THROUGH JAM CLEAT
DOUBLE UPRIGHT BLOCK

While there is no real substitute for the manufactured jib roller reefing gear, different homemade versions that I've come across seem to do the job nicely. The way of making the one shown here is typical. There are two main requirements: a pair of stout swivels and the drum that does the winding up, or furling. If you can find a pair of the special swivels, fine. If not, the pipe and turned working part type serve well, if carefully made. Note, for the lower end of the assembled parts, that the single lug of the solid end of the swivel is gripped by the split band about the bossprit. Or it could be by a suitable fitting on the stemhead or the forward deck. The double lug brazed to the pipe takes the strap going through, and secured in the slot in the drum. Aloft the other swivel is held, one end by the mast band, the other by a turnbuckle, locked against unscrewing. If this doesn't permit enough adjustment to allow for the luff dimension of the jib (here purposely shown as too short) you'll need a strop of stiff rigging wire or, better still, a length of rod with an eye forged each end. The drum shown is an easy to make type; simply two plywood cheeks and a shaped hardwood core to give a sheave-like fitting. The bigger its diamter the quicker the jib can be wound or unwound. Six to eight inches inside diameter is usual. The line operating the drum should have the ends spliced together, after being stapled in a couple of places to the drum, then several turns taken. The two parts must lead fairly to a two-upright-sheaves fitting atop the bowsprit (or on deck) then carry back to a sheave-on-the-flat fitting. In between these, where convenient to reach, should be a jam cleat, so that the one part of the line can be held as wanted to prevent the reefed or completely furled jib from unwinding. Understandably one must persevere in making small changes until the arrangement works smoothly. But when you do have everything right this reefing feature is a worthwhile one.

WHAT'S YOUR PROBLEM?

This department is under the supervision of Peter R. Smyth who, with a group of experts, endeavors to answer all reader inquiries by mail. Those of general interest are printed on this page. It is requested that readers limit themselves to one question, and keep it brief.

Increasing Horsepower

G.C., Tallapoosa, Georgia

I have a 30 hp. outboard motor. I am not sure if it is a 1957 or a 1958 model.

I want to know how to increase the horsepower on this motor. What can the hp. be increased to and how?

This motor is an electric start on a 14 foot fiber glass boat and it pulls small skiers out of the water well but a 200 pounder is hard to get up.

There is little you can do to increase the power of your Elgin outboard motor except to keep it in perfect tune. Modifying the power head by machining ports, increasing compression ratio and the like, involves major, delicate machining operations beyond the scope of the ordinary motor shop. However, if you are pulling heavy skiers the load may be great enough to slow the engine to less than rated speed. If possible, beg, borrow or buy a tachometer. While towing a skier, measure revolutions. If the engine is spinning less than 4,000 rpm you may do well to get a propeller of about an inch less pitch. Most outboard motor dealers have a selection of propellers and can help you with this.

Wants More Speed

L.Z., Miami, Florida

I have recently bought a 1948 Steelcraft sedan cruiser, 26 ft., length 9 ft. beam, weight about 6500 lbs. It is powered by a 95 hp. Chrysler Ace 6 cyl. engine with a 1.5 to 1 reduction gear.

The former owner said it would do about 8 to 9 miles per hour turning a 16 x 12 wheel at engine rpm. of 2600.

What I would like to know is if this is the top speed this engine can produce.

Secondly, can this boat with its lines, be powered to produce speeds up around 20 to 25 mph? If so, what power would it take and size wheel. Also are reduction gears advisable? If so what ratio.

No doubt you are familiar with this type boat. It is no longer made but I think that Safti-Craft took over the company and I think the lines are quite similar.

I regret to advise that your 26-foot Steelcraft will not perform well even with greater power than now installed. Not too many months ago we had a similar letter from a man with the same type hull powered with a 115 hp. Chrysler Crown, and I was able to contact a former Chrysler man that was close to the development of the Steelcraft boats. He advised me that the hulls simply would not perform even to the extent of propellering the Crown engine for the full rated power. From what I recall of our conversation the only reason you can swing a 16" propeller is due to the reduction gear. The Crown direct drive would only swing 14", but performance was improved by later building the boats with reduction drive engines.

I would say you are doing as well as can be expected.

Not Enough RPM

J.G., Cliffwood, New Jersey

I have built a 24 foot motor sailer and have had it in the water for two seasons. It is a very heavily built boat and weighs over 6,000 pounds. The designer specified about a 10 to 20 hp. engine. I am using a Michigan Senior Twin of 15 hp. at 2,000 rpm.

Both the engine supplier and boat designer recommended a 15 x 10 two blade propeller for this engine. I tried this propeller and found that I couldn't get any more revolutions of the engine, or speed of the boat, over ¼ throttle opening. The boat is slow and I expect it to be, but with only ¼ throttle it didn't turn over fast enough to charge the battery. I changed the propeller to a 14 x 8 two blade. This propeller let the engine turn slightly faster, so I now can run about 1/3 throttle. This still hardly charges the battery. I use about .8 of a gallon of gas an hour, and I also estimate the rpm of the engine to be only about six or seven hundred. Do these things mean I am not getting the full horsepower from the engine? If so, what size propeller should I use? Up till now I have never bothered to try and line up the blades with the deadwood while sailing, so I have been thinking I might try a three blade propeller.

It sounds as though you are fighting the inevitable. No matter how hard you push the little engine, the boat will not move any faster. You have stated that you know the boat is slow and are not too worried about that, but the engine will not turn fast enough to charge the battery.

I think that all hands will agree that the engine would do better by the boat if equipped with 2 to 1 reduction gears; then you could swing the 15 inch diameter by 10 inch pitch wheel and allow the engine to turn a goodly speed. Also, with reduction gears aboard, the boat would go a little faster, but not much.

If the generator is belt driven, change pulleys so that the generator spins about twice as fast as at present. Another alternative would be a 12 x 7 propeller; it will not make the boat go any faster, but it will let the engine spin faster and increase the charge rate. However, changing propellers just to help the charge rate sounds like the tail wagging the dog.

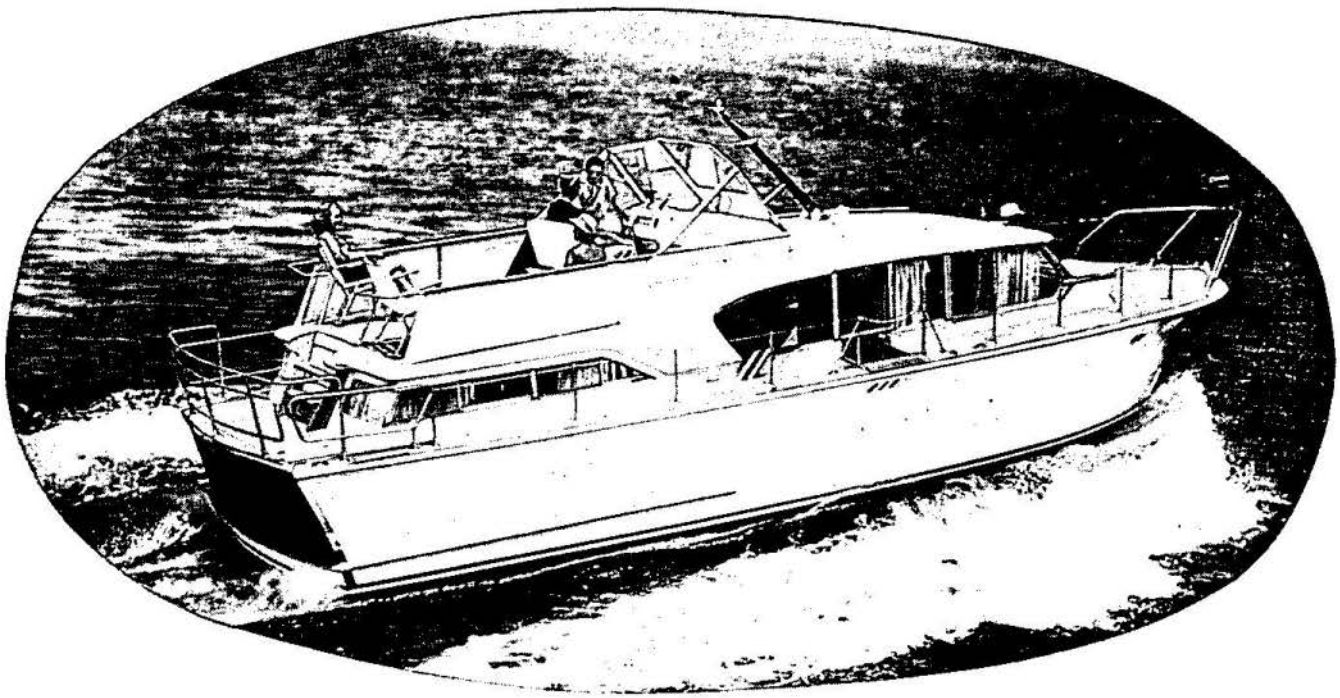
Requests investment advice

R.C., New York, N.Y.

I plan to open a savings account soon. Its sole purpose is to serve as my boating fund. A fund from which I can purchase a set of plans and building materials. Now, I am a resident of New York but would like to take advantage of the higher interest rates in other parts of the country such as California. Can you give me the addresses of banks in California, or elsewhere, that I can rely on for this purpose? Any information you can give mt in this regard will bt deeply appreciated.

Since you are requesting investment advice, we fell that your question is outside the scope of our activities and we are not competent to advise how to invest for your boating fund. However, we think you will find the information in advertisements in The Wall Street Journal or the financial pages of The New York Times or Herald Tribune. Out-of-State banks and Savings & Loan Companies advertise in these papers.

Double Cabin Yacht



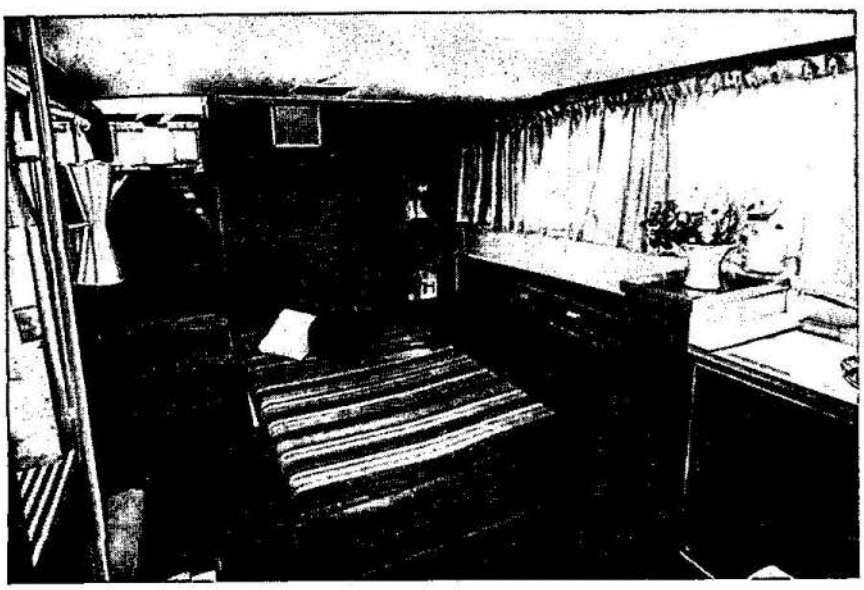
DESIGNER and BUILDER: Owens Yacht Division
Brunswick Corporation
Baltimore 22, Maryland

L.O.A. 39'9" BEAM 12'1½" DRAFT 2'9"

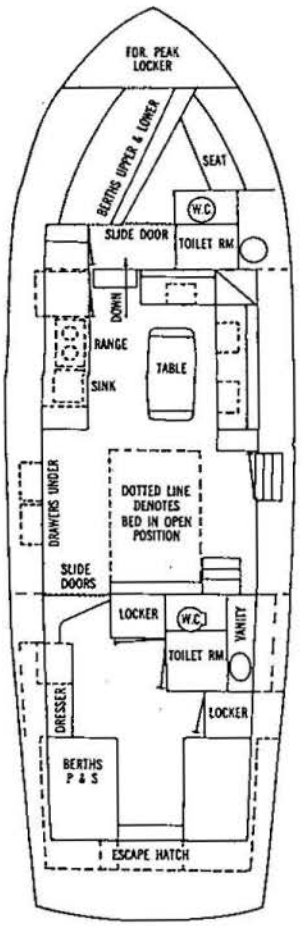
LUXURY is the keynote of this new yacht from Owens. She is called the Tahitian 40 and is the flagship of the Owens fleet. She offers the epitome in creature comfort afloat and the privacy of three separate cabins.

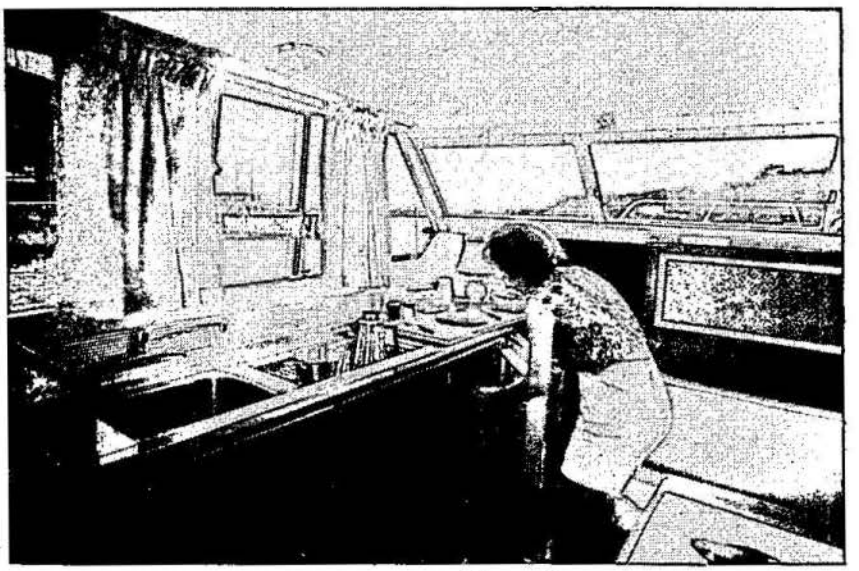
The master stateroom is aft and has twin beds, a head, and built-in dressers and vanity. The main cabin, amidships, has a galley which is convertible into a bar or service counter, a convertible dinette and a Hide-a-Bed. Forward, there are upper and lower berths and a second head. Eight persons can be comfortably accommodated. The entire interior is fully carpeted.

Her construction conforms to Owens' usually high standards. The hull is double planked Philippine mahogany over framing of the same material. She has twin Flagship 185 horsepower V-8 engines. Her fuel tanks, of 160 gallon capacity, are of Monel while the fresh water tanks are of

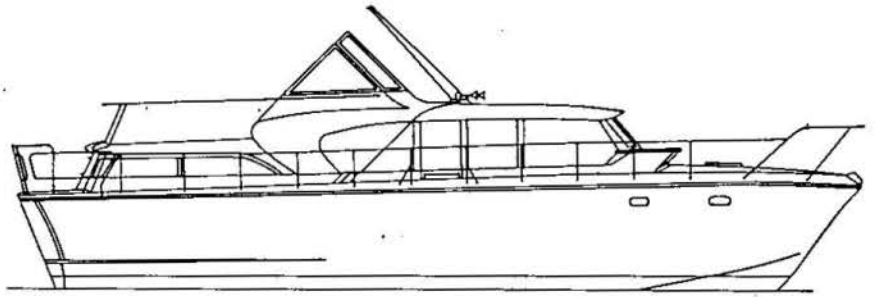


The main cabin looking aft showing the hide-a-bed in open position



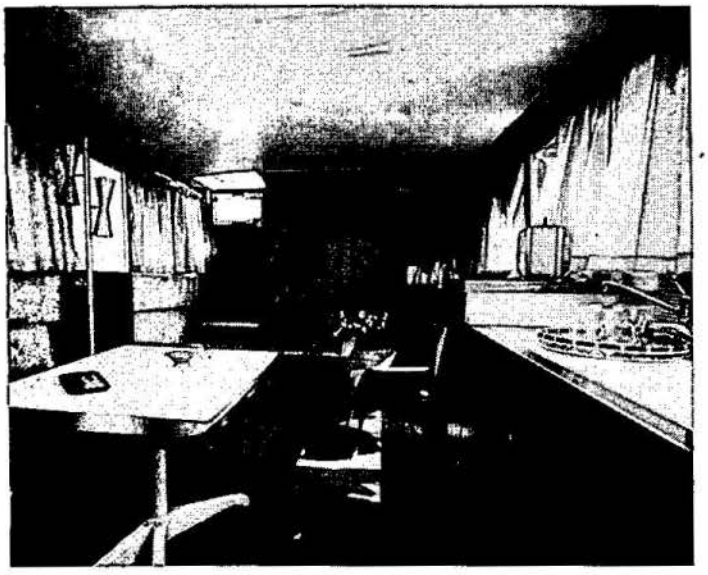


The galley is forward, on the port side of the main cabin



aluminum and contain 100 gallons. The cabin top is molded of one piece of fiber glass. She is all bronze fastened and all her fittings are either chrome plated bronze or stainless steel.

Displacing about 16,500 pounds, the Tahitian 40 is delivered with an exceptionally extensive list of equipment which includes all of the gear required by the Coast Guard.

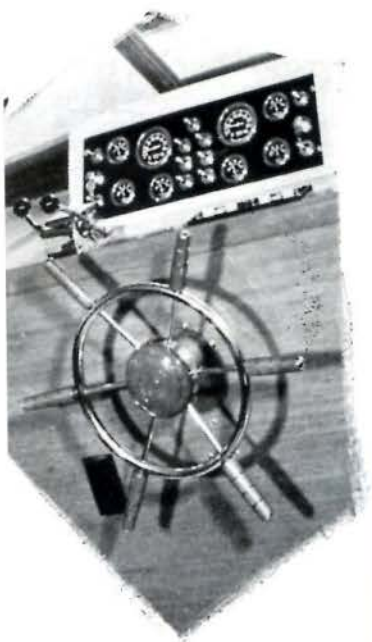


Above, the first mate washes up in the spacious head while to the left is another view of the main cabin

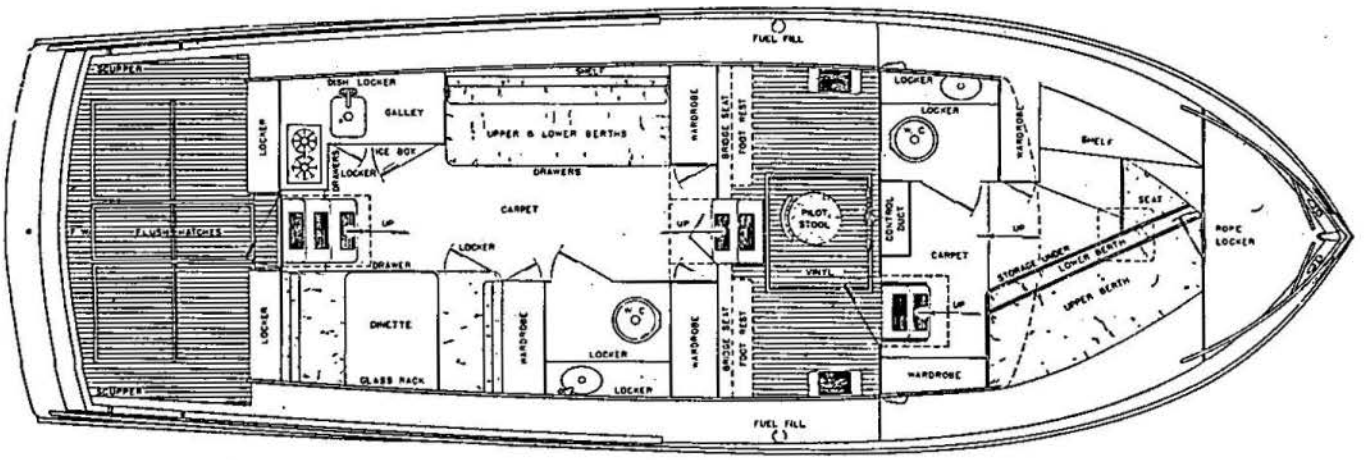
Steel Yacht

DESIGNER and BUILDER: Roamer Yacht Division
Chris-Craft Corporation
Holland, Michigan

L.W.L. 38′ BEAM 12′9″ DRAFT 2′ 10″

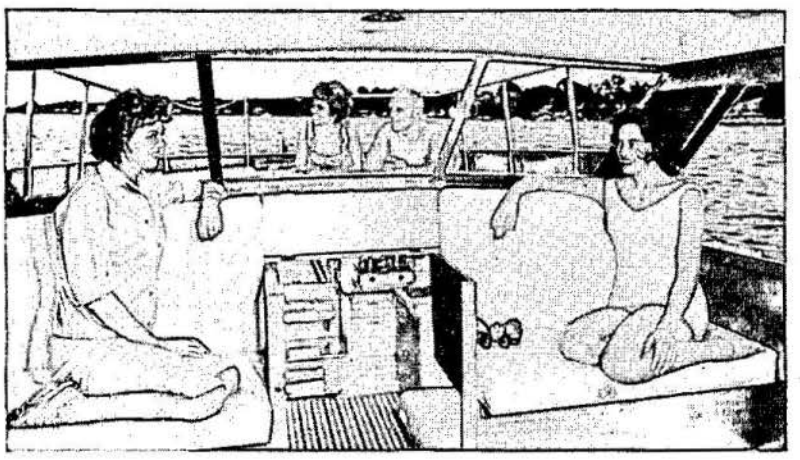


Above is a view of the control stand while to the right a view from the quarter shows the huge sundeck atop the main cabin

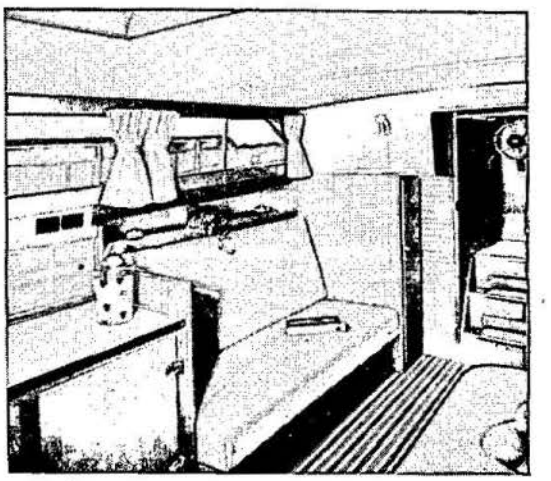


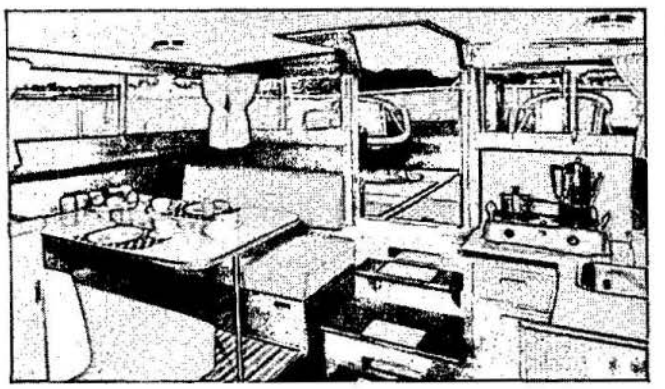
OFFSHORE is the name of this new model by the Roamer Division. While her hull is of Roamer's usual welded steel construction, her layout is anything but ordinary. The wheelhouse has been moved forward, with the main cabin located aft. The engines are under the afterdeck and are connected to the propellers through vee-drives. This layout is reminiscent of the old Elco 42-footers and is a very practical one, allowing complete privacy for six in two cabins separated by the wheelhouse. In the case of the Offshore, the after cabin has a convertible dinette and upper and lower berths, while the forward cabin has an upper and lower. The galley is at the after end of the aft cabin and there is a head in each cabin. A shower is optional. Several other advantages stem from this arrangement. The skipper has vastly improved visibility and the space over the main cabin makes an excellent sundeck.

Other features of the Offshore include Capac corrosion eliminator, fresh water system, hot water system, quite complete interior fittings, and a choice of engines up to 560 horsepower.

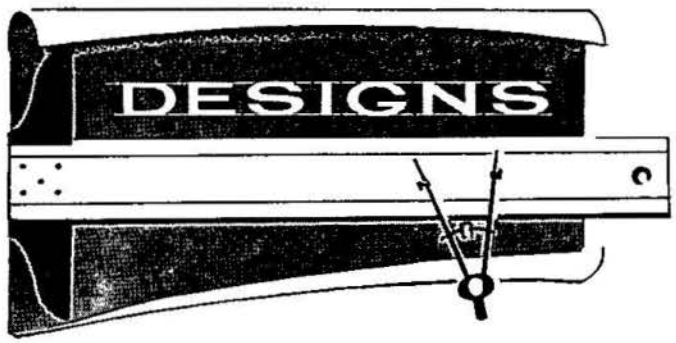


(left) two young ladies take their ease on the seats in the wheelhouse

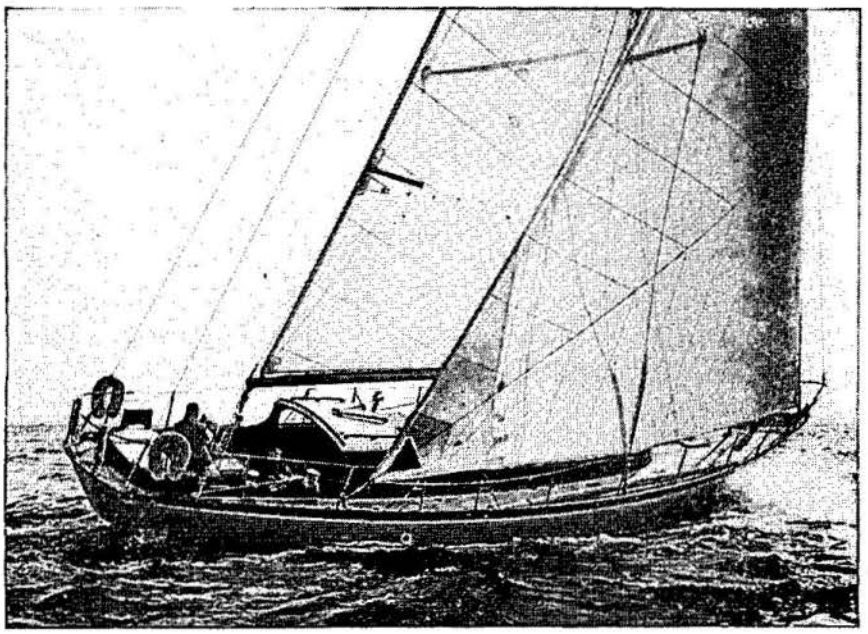


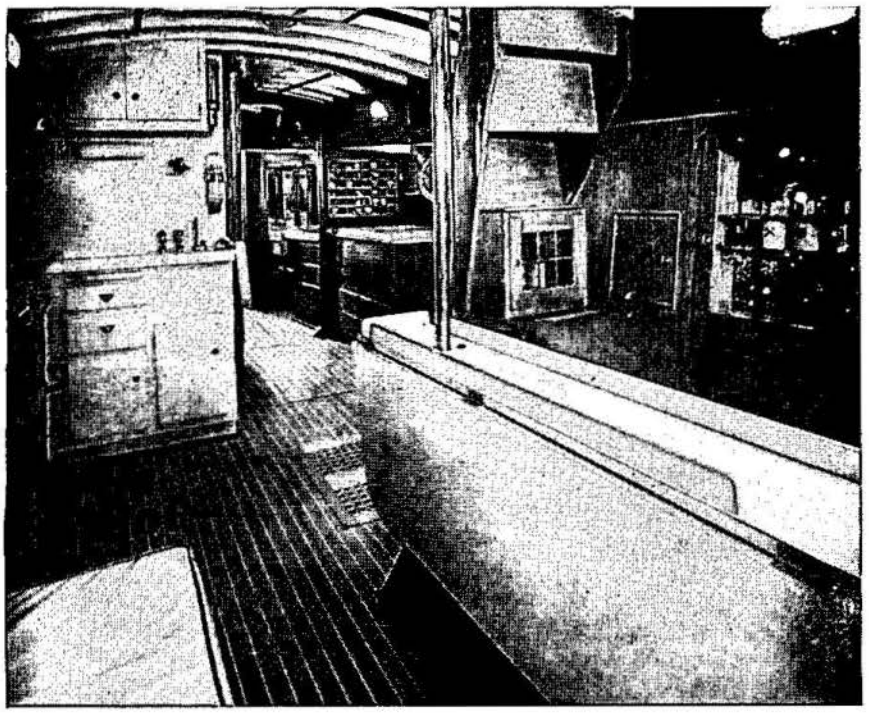


(above and left) two views of the main cabin which is aft under the sundeck



Rhodes Auxiliary





WHEN A DESIGNER as experienced as Philip L. Rhodes gets together with an owner as experienced at ocean racing and cruising as Paul Hoffman of Larchmont, New York, the results are bound to be interesting. In the case of the Thunderhead, they are more than interesting. They are outstanding.

It is rarely this writer's privilege to describe a design so suited to her purpose. Mr. Hoffman wanted a boat that would be a comfortable, handy cruising boat that would do well in ocean racing. This is many people's ideal, but most of them fall woefully short. On the other hand, Thunderhead's plans reveal many features that would be the delight of anyone who has ever raced in a small boat. The cockpit is split level, with the helmsman behind and higher than all the winches. Here, he has wonderful visibility and there will be no one to get in his way. The remainder of the cockpit is sunken, which brings the winches to waist height for maximum efficiency. The forward end of the cockpit is sheltered and contains a chart table and instruments. The remainder of the deck and house is as stripped and as clean as possible. Even the forward corners of the trunk cabin have been rounded to allow more deck area while not interfering with the accommodations. Thunderhead also sports something rarely seen these days, polished bronze hardware.

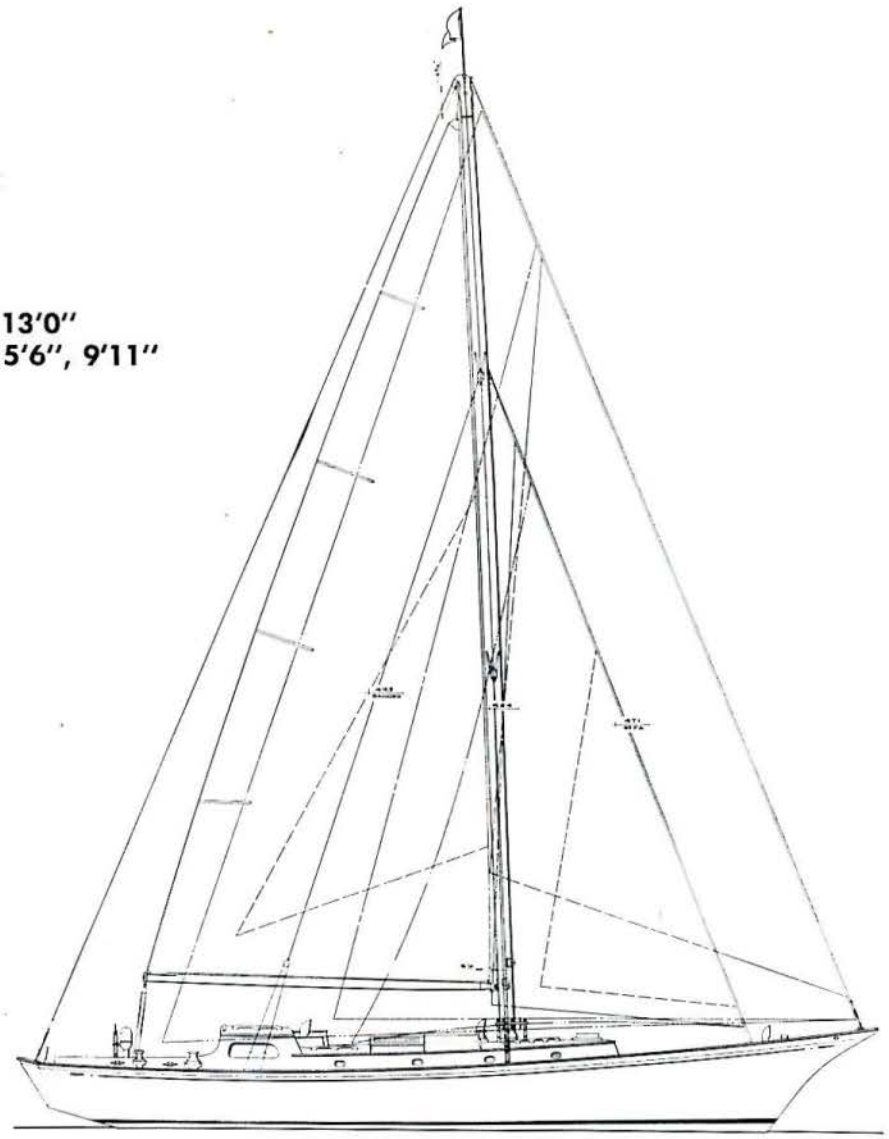
Below decks, the arrangement leaves little to be desired for either of her two purposes. In port, the wide open

(Above) Thunderhead hard on the wind while the photograph below is looking forward in her main cabin showing the galley to port and the circular companionway to starboard

DESIGNER: Philip L. Rhodes
369 Lexington Avenue
New York 17, New York

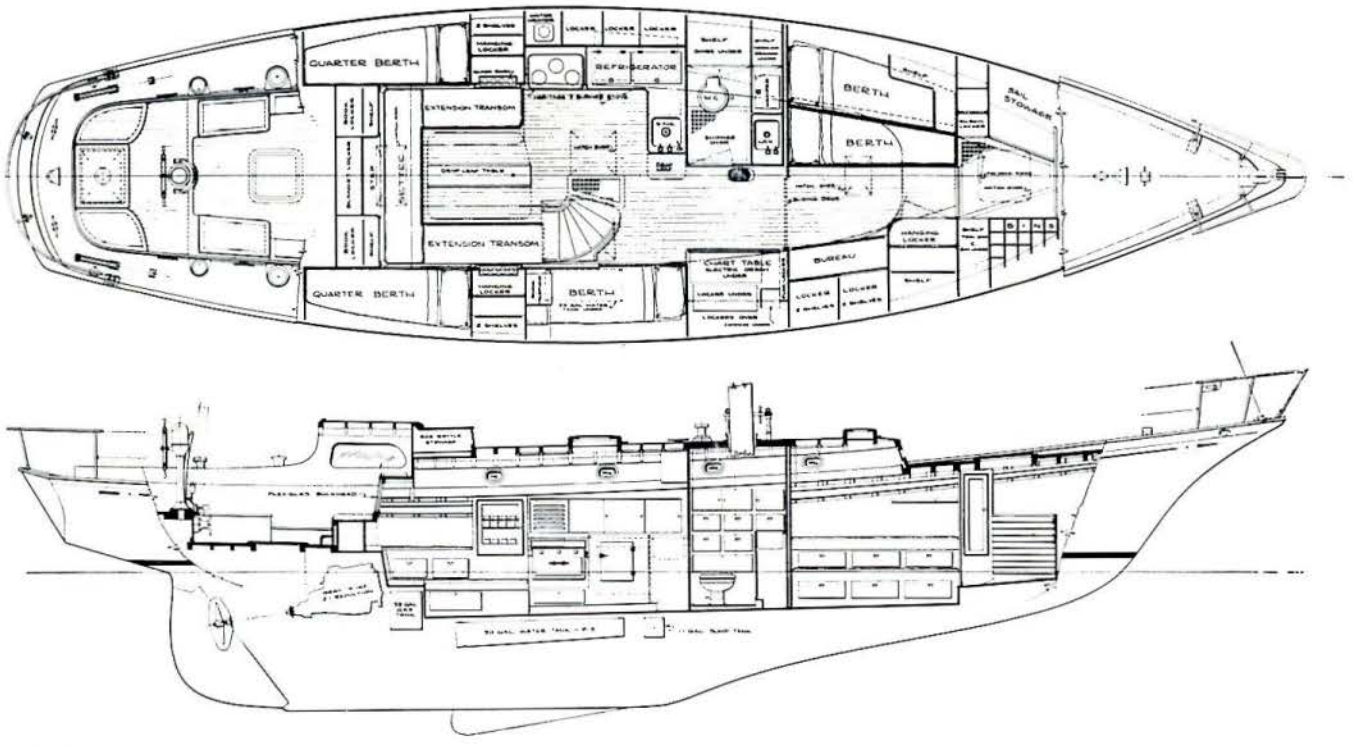
BUILDER: Abeking & Rasmussen
Lemwerder, Germany

L.O.A. 48'9" **BEAM 13'0"**
L.W.L. 37'0" **DRAFT 5'6", 9'11"**



aspect of her cabin provides plenty of *ventilation* and no feeling of being cramped. At sea, the midships companionway allows the crew to eat or sleep without the deck watch having to stumble past them. The navigator has his own berth tucked away under the circular companionway. The interior is finished in hand rubbed African mahogany.

Mr. Hoffman did not spare creature comforts. (There is a dressing table for his wife and an electric organ.) Nor did he spare the horses on her construction. The specifications are, quite literally, of the highest, and Abeking and Rasmussen did an excellent job of building her. She lacks in no detail that would make her a better boat for her job and if this description sounds slightly estatic, you're right, it is.



Utility Launch

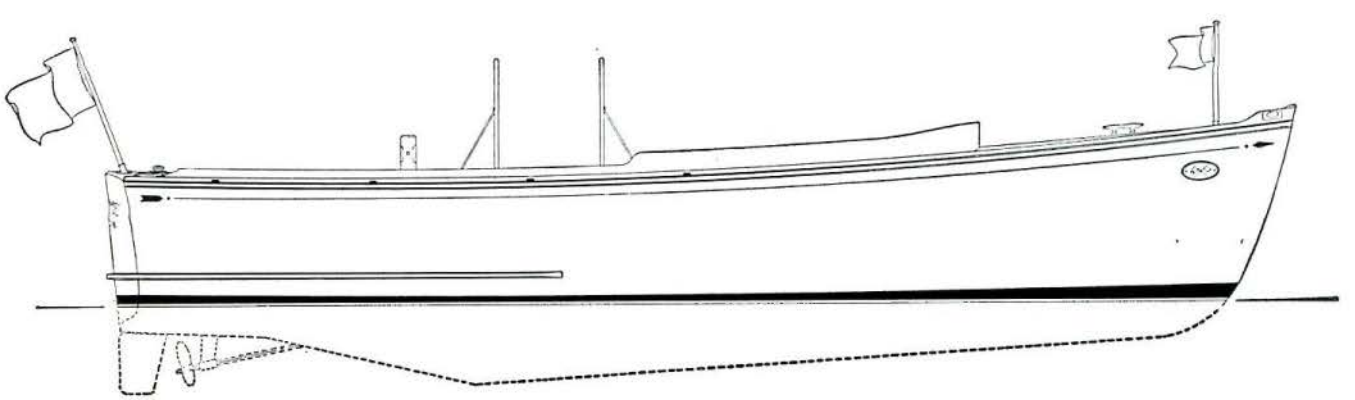
The clean smart teak interior

DESIGNER: Edmund A. Cutts
BUILDER: Glen Cove Marina, Inc., Glen Cove, New York

L.O.A. 24'4"	**BEAM 7'3"**
L.W.L. 22'8"	**DRAFT 22"**

We know that many of our readers will be pleased with the nice serviceable launch shown on this page. The excellence of construction is obvious from the photographs. Planking is cedar and long leaf yellow pine. The decks and seats are natural finish teak. The power plant is a Palmer 60, although other motors can be used.

This is the first of a series of semi-stock boats with various modifications possible to suit individual requirements. The one here illustrated would be an ideal club launch, but many other uses can be found, and she can even be built as a small cruising boat for two. The boat is level riding at all reasonable speeds, and maneuvers well in close quarters. In a chop she proved sea kindly.



I Have An Idea

Preventing grease leakage

To trailer boatmen the most critical parts of their rigs, when on the highway, are the wheel bearings and the tires. On the larger outfits, the wheel brakes require frequent inspection to make sure that grease has not leaked onto the brake drums.

As the wheel bearings warm up the air and grease expand within the hubs, sometimes forcing grease by the seals into the brakedrums. This can be remedied easily, and with little expense. Small brass pressure relief valves are available from any fuel pump and carburetor repair shop. Actually, these valves are check valves, used in every fuel pump. (Some pumps use two valves, others use four.) If new valves are not available without buying a complete fuel pump repair kit, then old, discarded valves are available. An Oldsmobile fuel pump, obtained from a junkyard, contains four valves.

By drilling a hole in the bearing cap, the valves can be pushed in. (I soldered the valves in.) As the pressure builds up from the heat, the air escapes by the valves, eliminating the cause of grease leakage. The valve is all brass, including the spring, so there is no danger of rusting.

E. L.
Englewood, New Jersey

Tightening chair bottoms

If you have any cane bottom chairs aboard your boat whose bottoms sag woefully, use wet towels on top and bottom of the cane seat, tying them on if necessary, and leave towels on a full half hour, with the chair upside down. Then remove towels, but leave chair upside down until dry and the cane seat will tighten up like new.

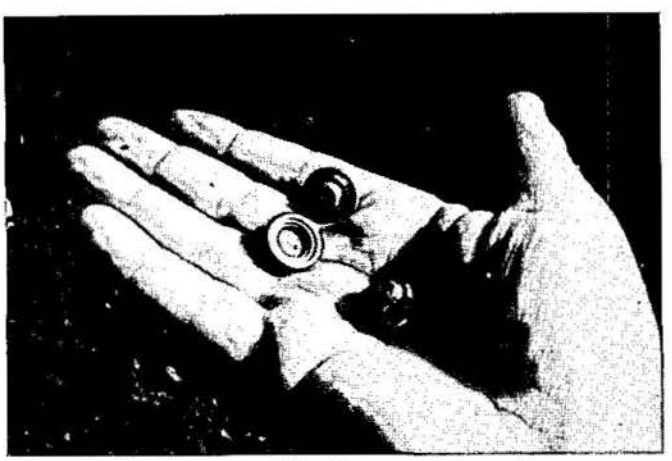
H. M.
Washington, D.C.

More emergency repairs

We were miles offshore when a brass coupling split on the fuel line of my boat's engine and gas began spouting out like a geyser.

Softening a bar of soap in water, I forced it into the split, making an effective temporary repair that was still good a week later when we got around to replacing the broken fitting.

H. M.
Sarasota, Florida



These tiny fuel pump relief valves are inexpensive

The Rudder will be glad to pay $10 for each published idea that will contribute to the comfort, safety, or just plain fun of boating. Send your contribution to "Ideas", The Rudder Magazine, 575 Lexington Avenue, New York 22, New York.

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'63

NEW YORK COLISEUM
COLUMBUS CIRCLE

RACING BEAT

BY JOHN RENDEL

Journalism in One Easy Lesson

THERE WERE ENOUGH sports writers, feature writers, magazine writers, White House correspondents and yachtsmen turned reporters to tell the history of mankind five times over after a fashion at September's America Cup races off Newport. Wire services spread the word everywhere. The New York Times alone filled twenty columns of facts, figures, fancy and photos the day after the first race. Correspondents from Australia and England exchanged accents along Thames Street. Enough Coast Guard cutters and Navy destroyers to fight a small war bore the minions of public information to see the sea, some of them for the first time and desperately unhappy when said sea built high.

The event was reported in depth, in detail and in doubt. It was reported by the New York Yacht Club race committee, too. Julian K. Roosevelt, its chairman, wrote a letter to W. Mahlon Dickerson, the club secretary, the day the competition ended as follows:

"The New York Yacht Club race committee reports that Weatherly won the best four out of seven races from Gretel and thereby the match for the America's Cup."

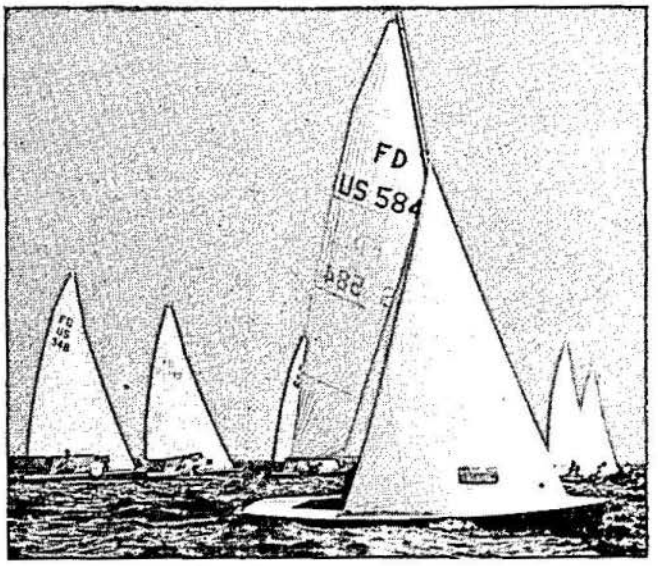
That was all. It was neat, concise, accurate, unembellished and unknown until the club had its annual awards dinner in the fall. Then the trim bit of journalism emerged in a booklet that contained the results of all the club's racing for 1962. When the next America's Cup match against an English challenger ends in 1964, this reporter hopes to file as terse an account. Then he will buy a donkey and make for the Maine woods as a member of the unemployed.

The prizes awarded at the dinner consisted of bowls, cups, crystal ashtrays, scrolls, ice coolers and maybe a few chic little items that were overlooked in the rush. The purchasing committee must have cleaned out a small store. There were so many that three men were needed to make the presentations. Everything was given away but the cup itself. It remained firmly on a stand in front of the dais and Commodore H. Irving Pratt allowed that he hoped it never would leave. The prizes were for the club cruise and the annual regatta as well as for America's Cup participation.

The club had accepted the chance of loosening its 111-year-old grip on the cup earlier. After rejecting a challenge for 1963 from the Royal Thames Yacht Club as following the 1962 match too soon ("Who can afford to devote all of another summer to cup business right away?" asked one member), a second bid was accepted for a year later. So So maybe Roosevelt's successor will write a one-sentence letter to New York's secretary in September, 1964, that our defender has won the cup. Or an equally unemotional epistle that it has returned to the land of its origin. Perhaps only Khrushchev, whose Cuban rockets were being rattled the day the second challenge was accepted, can tell whether either letter will be written.

The British wanted the 1963 date because, wrote Lord Mountbatten, commodore of the Royal Thames, prospective

(*Continued on page* 66)



Sennett Duttenhofer of Miami (584) tacks off on his own in Daisy while behind him may be seen champion Pat Duane of Delray Beach in 444, Jeff Frayne of St. Petersburg in 199 and Eugene R. Hinkel of St. Petersburg in 348. Hinkel won the event with two firsts and a third

Miami Fall Regatta

THERE WERE 223 boats in twenty-three classes out for the seventeenth annual two-day event sponsored by the Coconut Grove Sailing Club and the City of Miami in November. The highlight was provided by Eugene Hinkel and Jeff Frayne, both of St. Petersburg, who finished so close together in the *Flying Dutchman Class* second race that they could not be separated. Hinkel became the overall winner with two first places and a third. Pat Duane of Delray Beach, the class champion, was second overall with her husband Jack as crew.

Other winners included Read Ruggles of Miami in the *Star Class*, Victor Cribb, Miami, in the *Raven Class;* Charles Vaughn, Miami, among the *Blue Jays;* Al Franklin, West Palm Beach, *Windmills;* Stephen Andrews, Sarasota, *Catamarans;* Dan Brown, Miami, *Snipes;* Oscar Nelson, Miami, *Lightnings;* Lock Pirie, Miami, *Sunfish*, and Clint Hamilton, Miami, *Jet 14*.

An Old Gal Rewarded

DOLPHIN, a 49-year-old Nat Herreshoff design, remains a tribute to the Wizard of Bristol's genius. Kept in immaculate condition by the Lockwood family of New Suffolk, New York, and racing under a modern sloop rig, she can beat the upstart products of naval architecture as often as not. There were loud cheers at the winter meeting of the Off Sounding Club at Springfield, Massachusetts, where the organization was founded in 1933. Perpetual trophies for the best combined scores in the spring and fall cruise races were awarded and Dolphin received the Kenneth B. Millett Trophy as the Class A-2 winner for the fifth time since 1957.

The other division winners were Albert B. Boardman 2d's Madrigal, L. Emmett Holt's Limbo, Warren G. Dellenbaugh's Libra, David Cabot's Bagatelle and Walter H. Scott, Jr.'s Arapho.

One-Design Classes

Snipe — When the class fiscal year ended on September 30, it was found that 755 new boats had been registered to raise the all-time total to 14,088 and that the record for any year in the last thirty-one had been exceeded by 134 boats. The new mark set an average of better than two boats registered every day in the year. Twenty-four fleets were chartered for a total of 554 in twenty-eight countries. Of the newcomers, seven were in the United States, four in Italy, three in Finland and two each in France, Spain and Turkey. Bermuda, England, Sweden and Portugese West Africa had one each.

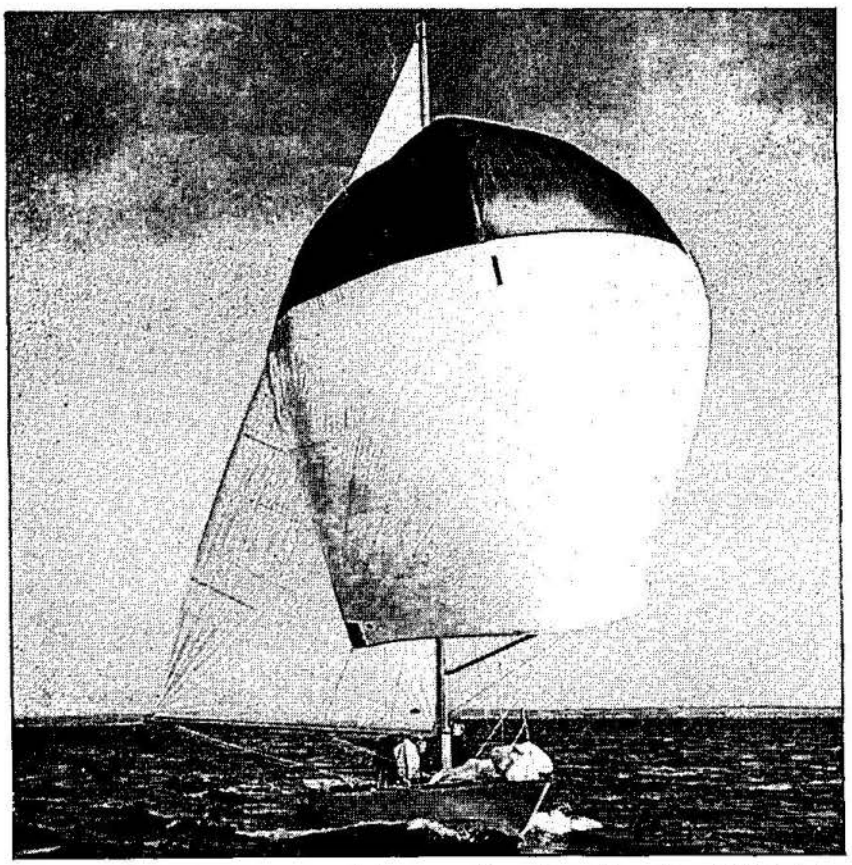
Cougar Catamaran — All officers were re-elected for 1963 in Seattle. They were E. F. Cotter, Kirkland, Washington, commodore; Robert Erickson, Philadelphia; Earl Sinnamon, Denver, and Doug Sherwood, Mercer Island, Washington, vice commodores; Ann Cotter, 11067 Champagne Point Road, Kirkland, Washington, secretary-treasurer. The use of trapeezes and spinnakers was not approved while racing. Bob Tatge, Denver, became the national champion in the Seattle regatta.

Blue Jay — This fast-growing class of 13½-foot centerboard craft had 3,200 registered boats at the last count. Amateur building programs were in progress at the Newport (Rhode Island) Yacht Club, the Sea Cliff (New York) Yacht Club and the Knicker-

Continued on next page

Short Hitches

Cornelius Shields, Sr., of Larchmont, N.Y., has received the Edmund G. Anderson Achievement Award from the Yacht Racing Association of Long Island Sound for his life-long contributions to sailing. No longer an active helmsman, his most recent activities have included being advisor to his son, Cornelius Jr., aboard the America's Cup defense candidate Columbia, donor of new Shields Class fiber glass racing sloops to New York maritime colleges, and developer of the new Chris-Craft motor sailer . . . A boat will be anchored beyond the surf line for the nine days of the Jersey Coast Boat Show at Asbury Park, New Jersey, to demonstrate the seaworthiness of modern pleasure craft. The show starts Feburuary 16 . . . The famous 70-foot ocean racer Bolero, now owned by Sally A. Langmuir of Beverly Hills, California, was first to finish and first on corrected time in the Los Angeles Yacht Club's San Nicholas Island event, a light-air test of 147 miles . . . A conference on one-design class racing and another predicted log competition are planned for the National Motor Boat Show in New York. The show dates are January 12-20 . . . George Llewellyn, Sr., of the Lorain Y.C. has been nominatd for commodore of the Inter-Lake Yachting Association. Other nominees include Frank Miller, Put-in-Bay Y.C., vice commodore, and Robert C. Dodsworth, Erie Y.C., and William H. Miller, Vermilion Y.C., rear commodore. The election was scheduled for Detroit on December 1 . . . A new issue of "The Yachtsman's Guide to the Bahamas" has been issued. It costs $1.50. Distributors include the publishers, the Tropic Isle Publishers, Inc., P.O. Box 613, Coral Gables, Florida . . . The International Daily Express Offshore Powerboat Race of 170 miles between Cowes and Torbay in England will be held September 7.



Shown above is the prototype of the new thirty foot fiber glass Shields Class. The class is named for Cornelius Shields of Larchmont, New York who had the class created primarily so that he could give five of them to both the New York State Maritime Academy at Fort Schuyler and the United States Merchant Marine Academy at Kings Point. An eleventh boat will be Mr. Shield's own boat. In the family tradition, she will be green and named Aileen. The class was design by Sparkman and Stephens and they are being built by the Cape Cod Shipbuilding Company of Wareham, Massachusetts. They are thirty feet two inches overall, twenty feet on the water, six feet four inches beam, and the draft is four feet nine inches. Their sail area is 360 square feet and the displacement is 4,672 pounds. One of them will be on display at the Motor Boat Show in January

ONE DESIGN CLASS

continued from previous page

bocker Yacht Club at Port Washington, New York.

210 Class — Jim Mertz of the New York and American Yacht Clubs had a gigantic receptacle for champagne at the New York Yacht Club awards dinner. It was the Manhasset Bay Challenge Cup, which he brought to Long Island Sound from Massachusetts waters last summer and received at the dinner. He said the N.Y.Y.C. would run the regatta for it next season. The cup, all of three feet tall, was awkward to handle for drinking purposes. Among those who missed the target and got champagne on his lapels was the commodore, H. Irving Pratt.

Celebrity — Larry Frost of the Island Bay Y.C., Springfield, Illinois, won the national "K" division title at the Columbia Y.C., Chicago, and Joseph A. Corbi, Rehoboth Sailing Club the regular division title at Rehoboth Beach, Delaware. The respective runners-up were Marvin Vollmer of Columbia and Fulton Lewis Jr. of Rehoboth.

Flying Scot — Election: J. Richard Eyerman, president; Carl J. Rippel, secretary; C. E. Stewart, treasurer; John C. Thierman, measurer, all of Columbus, Ohio. Also, H. A. Sawyer Jr., Riverside, Connecticut, commodore; Kilburn E. Adams, Dallas; Edwin B. Cobb, Rockport, Massachusetts, and John A. Beierwaltes, Wilmette, Illinois, vice presidents.

Star — The twenty-fifth annual spring championship will be held for the thirteenth time at Nassau. The dates are March 31-April 6.

International One-Design — Howard McMichael, Mamaroneck, New York, shipyard owner, was the main winner among the twenty who received prizes at the class presentation dinner in the Larchmont Yacht Club. His Kangaroo won all five of the class major championships—the season, Y.R.A., Bermuda series, Larchmont and Manhasset Bay race weeks. The total of prizes distributed was over eighty.

Rebel — The national championship has been set for the week of August 18 on the Crab Orchard Lake near Carbondale, Illinois. Bids for the 1964 nationals have been received from the Vermillion, Ohio, and Clark Lake, Michigan, fleets. A decision will be made at the spring meeting in April at Clark Lake.

L.A. Yacht Club Awards Trophy

Photo by Merrick

James and Mrs. Jensen, owners of the C-30 sloop Satori, proudly accept the famous Whitney Series Trophy for the most corrected time points during the 1962 yacht racing season in Southern California. The Los Angeles Yacht Club Trophy Awards Dinner was held at the Hunting Sheraton Hotel in Pasadena

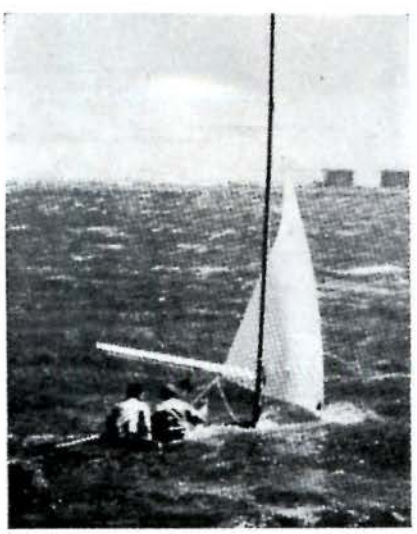
NEW A.P.B.A. PRESIDENT

Charles D. Strang Jr. of Oshkosh, Wisconsin, elected by mail ballot to head the American Power Boat Association, has raced outboards since his prep school years. He was one of the group that built the Intercollegiate Outboard Association while a student at M.I.T. before World War II. Since then he has served in various official capacities in the A.P.B.A. while earning a living with the Kiekhaefer Corp., manufacturer of Mercury outboard motors, as head of the design and engineering department.

Strang's posts with the power boat association have included being chief measurer and inspector, chairman of the stock outboard technical committee and member of the outboard racing commission.

Wild Ride On A Snipe

HERE is a picture of our fiber glass Varalyay Snipe 13362. I think many would be interested in the story behind the picture. The Snipes were having their District 7 championship regatta at Palo Alto, California. On the first leg of the first race there was a brisk breeze of 20 mph and moderate seas. Shortly after the race started, the wind increased to 45 mph, with three-foot seas. Within a few minutes, seventeen boats out of twenty starters were swamped (three had gone back). Our boat was included in the casualties. My husband didn't want to be towed in, so he and my son took down the mainsail, secured everything and sailed the two miles back under water and even tacked a few times. It was touch and go all the way, but they made it!



Mrs. John M. Salvin Jr.
Oakland, California
(From Snipe Bulletin)

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Kite — Rowland Lohman of the Balboa Y.C. won the first championship for the class at Newport Harbor, California. The first meeting for the class also was held, with Herb Hester named president, Lohman vice president and Allen Linn secretary. The four-months old class already has over fifty boats.

Lido 14 — Harry Wood of Long Beach, California, the national champion, was first in the two-day Sierra Sailing Association fall regatta at Lake *Woollomes* near Delano, California. There were thirty-three entries. Wood's 1-1-3 record put him ahead of Dario Sanchez of Redondo Beach, who had a 4-3-2 series.

Amphibi-Con — Herman Hansen finished first twice to keep the national championship for these small cruising craft at Marion, Massachusetts. The title for the smaller Amphibi-Ettes went to Larry Greenlaw with a 1-3 score.

More Gold Cup Heats

The Gold Cup, hottest race for the unlimited hydroplane class of super boats, will be hotter than ever if a change in the number of heats works out as planned.

"The program will have seven 15-mile heats instead of five 30-mile heats," said Lee Schoenith of Detroit, chairman for the class, at the American Power Boat Association's annual meeting in Miami Beach, Florida. "There will be more starts and, to spectators, the start is one of the best parts of the race."

Five cities were reported interested in filing bids for the 1963 event. They are Seattle, Coeur d'Alene, Idaho; Lake Tahoe, Nevada; Madison, Indiana, and Detroit.

The outboard racing commission said through its chairman, Manuel Carnakas of Bakersfield, California, that a new scale of gross weights for boats would be submitted to members for a mail vote. It's a move toward safety, he said. Speeds were too high for the lightweight hulls, he explained.

"They set records at only 50 miles an hour a few years ago," he said. "Now they're hitting 70 miles an hour —and in the same boats."

Paper Fleets Beware

The governing committee of the International Star Class Yacht Racing Association is shaking a stern finger these days at those who seek to enter the class world championship and other major regattas without first having undergone the test of competitive fire in their own back yards. The committee says it has learned that several "paper fleets" exist. They have enrolled members and boats. They live only on paper, conducting no competition, but send representatives to the big-time events.

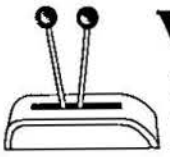
"This abuse must cease," warned the committee. "The necessary steps are being taken to eliminate all paper fleets. The situation is already covered by class rules; it is only required to enforce them."

All existing paper fleets will have their charters revoked as soon as possible. Skippers enrolled in them were urged to join real fleets immediately. Meanwhile, the following question will be included on the entry blanks for championship events:

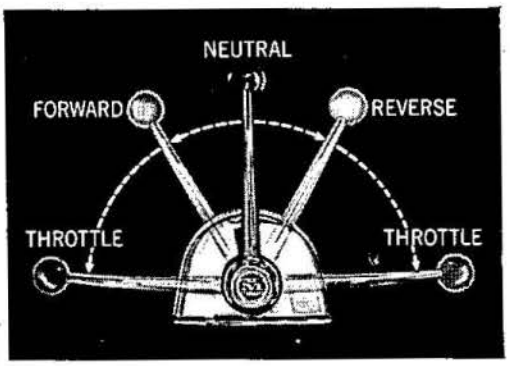
"Has the skipper sailed his own yacht in a representative number of Star races within the territory of his own fleet during the past year as required by Section 1 (e), Article V, of the world championship rules?"

Unless the question can be answered with an honest affirmative, the entry will be rejected, said the committee.

Ψ Ψ Ψ



Why fuss and fumble with two control levers? The Morse system combines both gearshift and throttle in just *one* lever. Simply push to go forward and pull back to reverse. That's all there is to it. A Morse single lever control is so easy and safe to operate that anyone can get the hang of it...first time out! The Coast Guard uses Morse controls. Leading boat builders do, too. So if you are still struggling with separate control levers on your present boat, we suggest you find out from your dealer how little it costs to shift to Morse. We have models for any popular make of motor, every type of boat — inboard, outboard, outdrive.



The MORSE INSTRUMENT CO. Hudson, Ohio

Free Boating Guide. For a copy of "Say, Skipper!", write Department CR-1.

aboard the outboards

by Don Olesen

Bewitched, Bothered, RESOLVED

WE ARE IN the witching season, the era of the New Year, the time in which rational men make irrational resolutions on such subjects as women, election bets, tobacco, spiritous liquids and the late-late show. The writer has a far more serious vice to kick. Boats.

For 1963, I firmly resolve:

Never to launch a boat without first determining that the bilge drain plug is closed . . . It was a homely gravel ramp, near Annapolis, Maryland. We had the boat loaded—sleeping bags, perishable food, the skipper's pipe tobacco. We launched. There was a foot of water in the bilge, the bags, the chow, the tobacco, before we got the dagnabbed drain closed.

Never to store an outboard motor for the winter without dousing its cylinders with oil . . . We took the old kicker to the basement and stored it on a sawhorse without further ceremony. Next spring, it was frozen tighter than the United States debt. We tried penetrating oil, prayer and brute force. A thoughtful friend suggested a pinch of dynamite. This theory was vetoed on the theory that it would awaken the baby. We hope the junkman got it winding.

Never to haul a boat over the Ohio Turnpike in early March . . . Somewhere between Ottokee and Tedrow, we got smothered by the wildest, wettest blizzard since Simon Legree's hounds pursued Eliza over the ice. The trailer springs sagged under the weight. Have you ever attempted to bail a boat with a snow shovel?

Never to take a wife cruising . . . "Honey," she said, "the chart says to take the can to port." The skipper snorted. "Boy and man," he said, "I've been taking it to starboard." It took us less than fifteen minutes to grunt the old hulk off the bar.

Never to cruise without a bug bomb . . . Dusk came hot and still on the Wisconsin River. We dropped the hook off a scraggly, wooded island which hasn't changed much since the last icecap retreated. Our Cruisers, Inc. cabin cruiser had screens, but Wisconsin mosquitoes can drill through tempered steel plate. It was a horrible night, every second of it, and I have the welts to remember it always.

Never to anchor for the night near a rendering plant . . . The chart showed a nice, snug harbor on the Potomac River, south of Quantico, Virginia. We were exhausted by the time we made it. Subtle odors began drifting over the water, strong enough to chin yourself on. The human system is incredible. I think we all slept a bit that night.

Never, never to share the ownership of a boat with another human being, including Eagle Scouts, Chamber of Commerce presidents, and church deacons . . . My last co-owner never showed up at fitting-out time, but this was expected. I did resent his habit of making landfalls by the process of striking the buoys head-on. I sulked at crackers and bobby pins in the bilge, at gouged topsides, at lost bilge pumps and seat cushions. Since then, my partner has been charged with burglary, wife beating and forgery. He is regarded as a likely choice for the F.B.I.'s "ten most wanted" list.

Are You COLORFUL?

WHEN I mothballed the family's 16-foot yacht last fall, I was smartly clad in dungarees speckled with fifteen varieties of paint (and a large hole burned in the pipe pocket). My denim shirt was daubed with sophisticated accents of hardened polyester resin. My paint dappled Topsiders had holes.

Not long after, I picked up a press release from a sportswear manufacturer entitled, "Fashion Arrives on the Boating Scene." I cringed with shame. I was Out of Step.

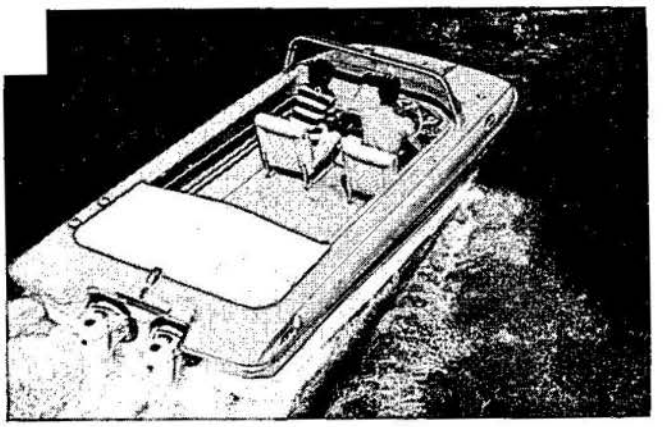
This firm makes jackets utilizing nautical code flags, among other things. "Boaters buy them to banner their own initials, and to be recognized as members of the marine fraternity," the release proclaimed. "Entire boating families buy them and then walk down the streets abreast so their jackets spell out their name to

those in the know."

Obviously, I was Not in the Know.

But the release had more to offer. Other jackets feature those novelty flags, it seems—"a champagne glass applique for the cocktail hour, the Jolly Roger skull and bones when you're out for fun . . . their bright luminous colors and bold design can be seen for miles out at sea . . ."

Ingenious as he is, the clothing manufacturer apparently has missed a bet. Why not smart jackets bearing the United States ensign? When in trouble, you can fly the first mate upside down from the signal mast.



OMC Adds the Horses

A YEAR AGO, Outboard Marine Corp. unwrapped its first "package" boat, a unique 17-footer with an unusual bottom design. The boat, described as a three point hydroplane, rides at planing speed on its two sponsons and on its flat after planing surface. This original version was powered by OMC's two cycle inboard engine, rated at 80 hp. and working through the company's stern drive unit.

For 1963, OMC has added three new models to its line of 17-footers, stepped up the rating of its engine to 88 hp., and installed dual engines on one model. Total: 176 hp.

The new power plant features an automatically metered, independent oiling system instead of requiring you to mix oil with the fuel, as in conventional two cycle engines.

The dual engine boat is capable of speeds in excess of 40 mph., the company claims. (Last year's model, with single 80 hp. engine, was supposed to do 30 mph. or better.)

Another new 1963 model, the Seasport, is designed for such activities as fishing, water skiing, skin diving and cruising. It has a special windshield and two OMC-designed shock absorbing seats. A camper top is available as a Seasport accessory, offering standing headroom in the cockpit. A conventional cruising top also is available.

OMC's 17 deluxe, introduced last year, has complete instrumentation—rudder position indicator (to show position of the stern drive), speedometer, tachometer, ammeter, fuel gauge, warning lights to indicate overheating or low oil pressure, and cigarette lighter. There are switches to operate running lights, bilge pump, ventilation blower, to tilt or lower the outdrive, run the windshield wiper, and to tilt the tinted safety glass windshield.

A custom trailer, designed for all models, fills out the OMC package.

LOOK— Almost No Hands!

A LITTLE FALLS (Minnesota) boatbuilder is using a hot welding gun, cool water and automation to build small aluminum boats. The little runabouts appear to be almost untouched by human hands.

The Crestliner Division of Bigelow-Sanford, Inc., faced several familiar problems when it set out to build an all-welded aluminum runabout. Aluminum welding is touchy; the aluminum sheets used in small boats are so thin that heat from the welding torch can distort or burn through the metal. As a result, aluminum welding in the small pleasure boat field has been a sometime thing, never carried out on a sweeping scale.

Last year, however, Crestliner introduced an automated system which completely eliminates riveted construction. The technique is a bit awesome. This is how it works:

A master frame was built to the shape of the boat. Precut aluminum plates and extrusions (gunwales, chine and keel units) are placed on the frame by hand. From then on, through the welding, they are held in place pneumatically to a tolerance of .002 of an inch. Lights flash on automatically when the plates are properly in position.

An automatic welding gun is controlled from a master console. The welding head is suspended from overhead beams which allow the unit to run the full length of the hull. Timing circuits make the welding process automatic. Two persons only are needed—the console operator and one man to place the sheets and extrusions on the hull.

And the heat problem Engineers licked that by designing a circulated cold water system that hits the reverse side of the surface being welded. Water, 25 gallons of it, is cooled to 55 degrees and changed every 30 seconds.

Between them, the two operators can turn out 10 complete hulls in one eight hour shift, the company claims, and this output will be increased as the operators gather experience.

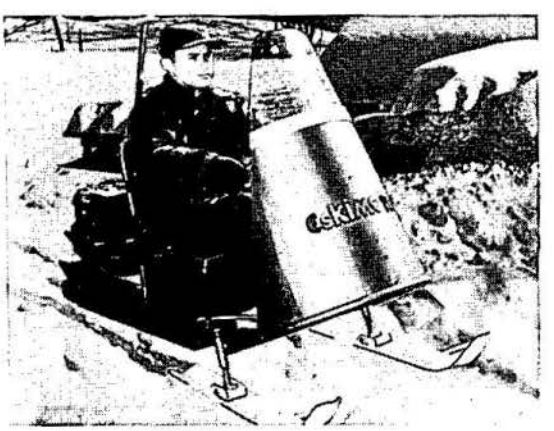
OUT OF PLACE?

YOU MAY ASK what a photograph of a motorized sled is doing on these boating pages. You also might ask what boatmen do in the North Country during an icy winter. Well, we hunt. We ski, skate, ice fish (and, incidentally, dream of warm days and open water).

The Tee-Nee trailer people decided to capitalize on some of this North Country winter zeal, and thus are offering something in addition to boat trailers—the Eskimotor.

The little ski scooter has a six hp., four cycle engine working through an endless belt drive. The two metal skis forward provide steering and are mounted under coil springs.

It will, Tee-Nee says, travel equally well in light or in heavy snow. If you see one parked in the window of your local marine dealer, don't be surprised. Diversification is a growing thing in the marine field.



INBOARD Vs. OUTDRIVE

TIME frequently has a way of scoffing at the experts. Several years ago, when the inboard-outboard power units first appeared in quantity, most educated guessers were guessing that this might be "a practical power package for big runabouts and small cruisers of up to, uh, 150 hp." Boats with more powerful engines would (most experts agreed) stick to conventional inboard drive with its fixed shaft.

And look what time produced. This year, you can buy an outdrive power package rated at 310 hp. (Kiekhaefer's biggest MerCruiser combination.) These bobtail units are pushing ponderous houseboats and some pretty substantial cruisers.

To anyone who ever has clobbered a conventional inboard propeller on a reef, the most obvious outdrive advantage is one inherited from its outboard cousin—it kicks up when striking an obstruction.

There are other "outboard" advantages, less obvious. The outdrive unit turns to steer the boat and does it far more efficiently than does the small inboard rudder — particularly in reverse. The angle of lower unit to the hull can be adjusted for the most efficient thrust under all conditions.

For the versatile outdrive, how high can the horsepower go? A 110 hp. MerCruiser unit hustles this Fabuglas runabout along.

There is no stuffing box on the outdrive, no potential area of leakage . . . The engine on an outdrive package is located close to the transom, taking up far less usable space . . . Installation of the in-out is far simpler.

The limiting factor in this cross between inboard and outboard appears to be engine weight. The engine is located, by necessity, next to the transom. The conventional inboard plant is placed forward, offering a better weight distribution. The heavier the engine in an outdrive package, the more unfavorable distribution.

Where the Dollars Go

When it comes to rock hard advice on how to preserve your car, your boat and your health, there is nothing more reliable than the experience of insurance firms, which have to pay out dollars for other people's mistakes.

Consider then the boating claims experience of the Hardware Mutuals —Sentry Life Insurance group. In a survey of boating claims, the Sentry Safety Council found:

That the most frequent boating insurance claims for liability, property damage, theft and collision, in that order.

That the greatest number of liability claims involving injuries from "fire or explosion caused by the faulty handling of fuel."

That clobbered propellers and damaged hulls are involved in the greatest number of property damage claims.

That outboard motors and boating gear—but seldom boats—are the items most frequently reported as stolen.

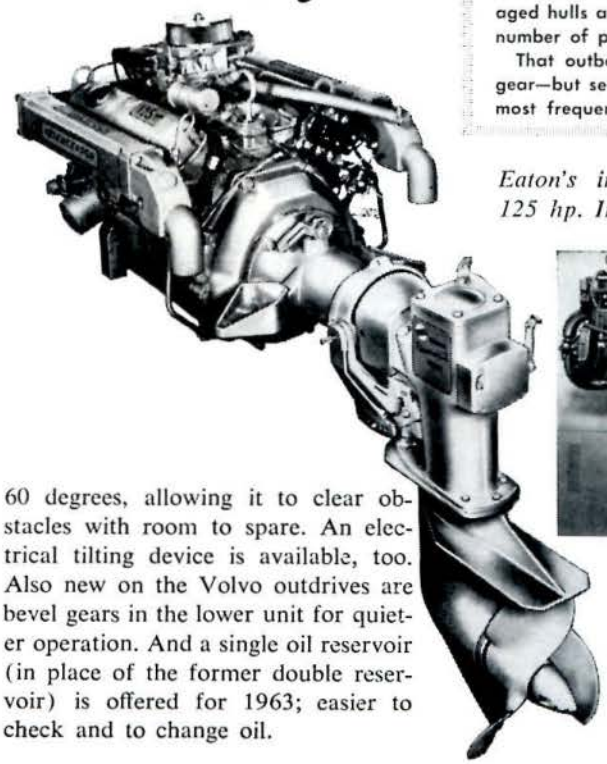
The Eaton-Volvo Family

FOR 1963, there are four inboard-outboard combinations on the family tree of Eaton Manufacturing Co.'s Dearborn Marine Engine Division.

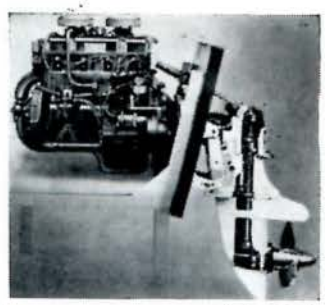
Meet the family: A new 125 hp., 221 cubic inch V-8 Interceptor engine with Eaton outdrive; the 100 hp., six cylinder Interceptor overhead valve engine with Eaton outdrive; the Volvo 100 and the Volvo 80, both used with Volvo outdrives. (In case you are confused by the proximity of these two brand names, Eaton now is an authorized distributor for the Swedish manufactured Volvo marine engines.)

The Eaton outdrive has a 360 degree swing which allows the unit to be rotated out of water for beaching, changing propeller or trailering. By lifting a release latch you can completely remove the outdrive.

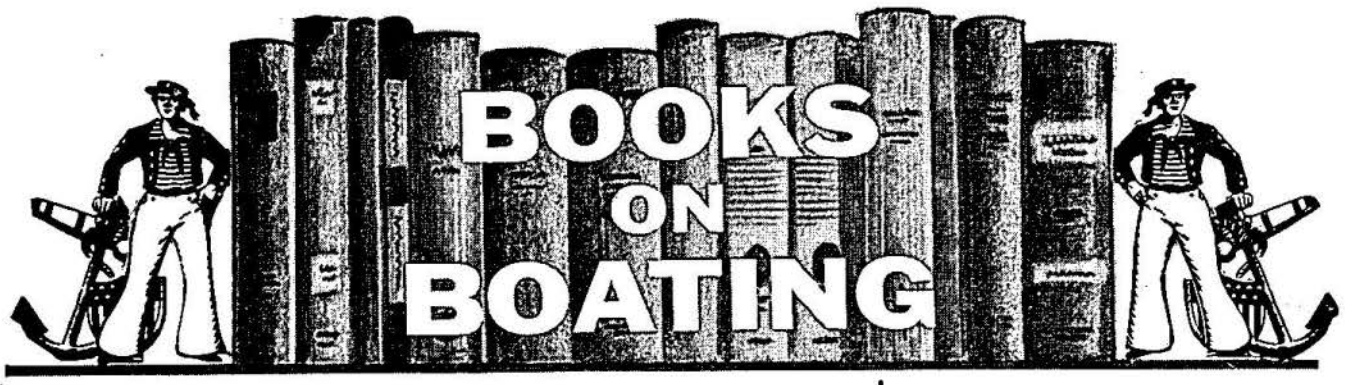
This year, the tilt of the Volvo outdrive has been increased from 45 to 60 degrees, allowing it to clear obstacles with room to spare. An electrical tilting device is available, too. Also new on the Volvo outdrives are bevel gears in the lower unit for quieter operation. And a single oil reservoir (in place of the former double reservoir) is offered for 1963; easier to check and to change oil.

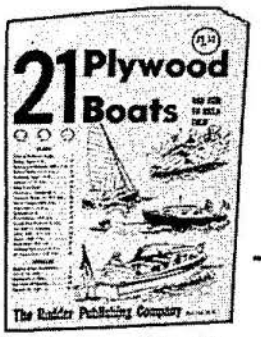


Eaton's inboard-outboard with 125 hp. Interceptor engine . . .



. . . and the Volvo 100 hp. package, with some new features





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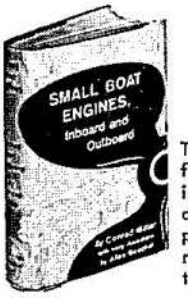

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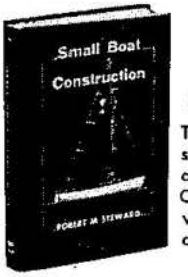

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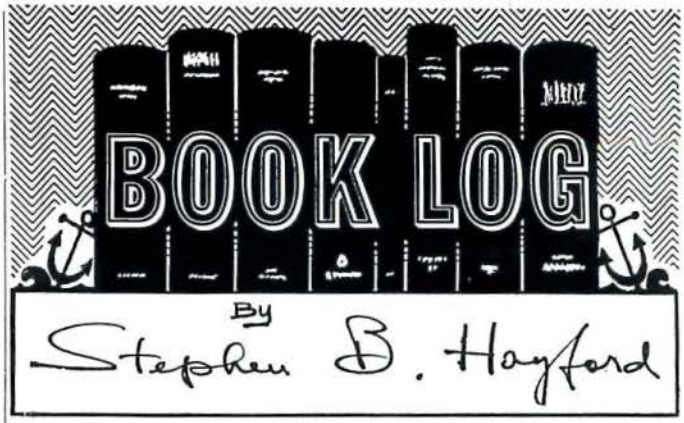


Skene's Elements of Yacht Design, By Norman L. Skene, revised and brought up to date by Francis S. Kinney, Dodd, Mead and Company, 214 pages, Illustrated, $9.00. Available by mail through The Rudder Book Department.

This is a revised edition of Skene's book, first copyrighted in 1927. Francis Kinney has produced a modern revision of which both original author and publisher can be proud. Although this is a technical volume, there is no reason why anyone interested in boats, even mildly, would not be fascinated by it. Here in 214 pages is a wonderful display of the technology of yacht design, the secrets of an elusive art, and the problems encountered in making boats sail better or go faster.

There are many advantages to the boatman who is familiar with the basic elements of yacht design. Primarily, such knowledge helps him to understand his boat, its capabilities and limitations; information too many of our skippers lack no matter what size boat. A greater appreciation of the sport of racing also results from an understanding of design. The recent America's Cup Race and the American trials for a defender which were so diligently reported by the press would have a great deal more meaning to one acquainted with the ways of creating efficient underwater shapes.

While it is not possible to enumerate the many topics in Skene's book in this limited space, among them are the drawing up of specifications, methods of calculating various characteristics of a boat, methods of construction, Herreshoff's rules for wooden yachts, the state of technology for newer construction materials such as fiber glass, sailboat balance, planing hulls, propellers and tank testing.

Ψ Ψ Ψ

All in the Same Boat, by Earle and Barbara Reynolds, David McKay Company, 310 pages, illustrated, $4.95. Available by mail from The Rudder Book Department.

The deeds and writings of Joshua Slocum have inspired many things in the world of boats. One of them is the voyage around the world by the Reynolds family that lasted almost six years. Dr. Reynolds is an American anthropologist sent to Hiroshima to study the bomb casualties. While there he caused the Phoenix to be built, and it was this same boat that he sailed into a U.S. atomic bomb testing zone as a protest. *(Forbidden Voyage 1961.)* He also later sailed into a Russian testing zone.

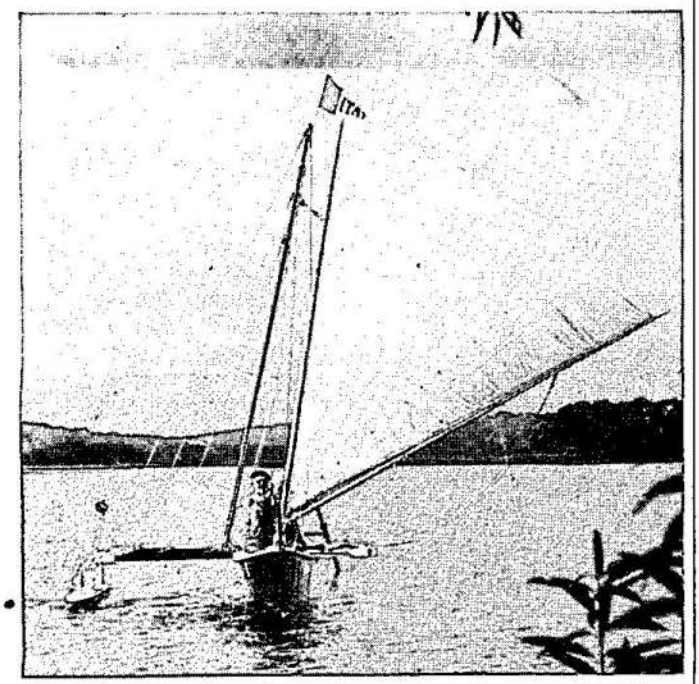
The events of the voyage take place during the 1950's, and in general followed the patterns one might expect to find in exotic lands. Naturally, there is the influence of the Phoenix crew (the authors' family and three Japanese boys) in the book which gives it a certain distinction. The writing is quite professional and the general account will hold the interest of any cruising buff.

Ψ Ψ Ψ

Our World Underwater, by William M. Stephens, Lantern Press, Inc., 254 pages, bibliography, illustrated with the author's photographs and sketches by Chuck Sharman, $4.95. Available by mail from The Rudder Book Department.

The sport and profession of underwater exploration and archaeology is well on its way to being able to boast an extensive library. Mr. Stephens has added a valuable guide to that library because he is thoroughly familiar with the technical requirements of diving and has drawn upon his experiences and the experiences of others to demonstrate his points. He covers the fascinating activities and rewards of real treasure hunters who have devoted their lives to the work, the discoveries of artifact hunters and cave explorers. Throughout the non-technical texts he weaves a pattern of instruction that is subtly hidden but it is there, so that the reader gets information in a painless, enjoyable way. Mr. Stephens is a former editor of Underwater magazine.

Ψ Ψ Ψ

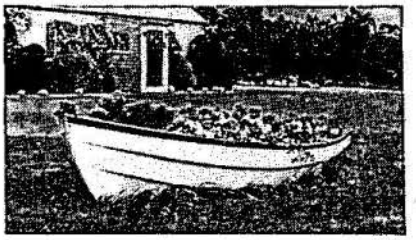


Shown here is a boat unusual not only in form but in history as well. Designed and built by A. E. Bierberg, Skovbrynet, Denmark, she is a modern development of the Micronesian Proa, or single outrigger canoe. Among other sources of information, Mr. Bierberg used venerable issues of The Rudder dated 1898 and 1909

Ψ Ψ Ψ

The safest boat

see page 9 for second safest boat



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FIBER GLASS BOATBUILDING

continued from page 29

Two types of resins are normally used in boat construction; epoxies, and polyesters. Polyesters are by far the most common due to several problems inherent in epoxies. They are considerably stronger than the polyesters, but it is doubtful their greater strength is necessary in boat construction. Their use is limited to applications where high strength is mandatory, such as in aircraft and in automobile tooling fixtures. Epoxies are rather expensive, but the greatest troubles in their use comes from the fact they require exact environmental control and must be mixed in absolutely the correct proportions. The polyesters will forgive a five percent error in mixing, but the epoxies won't. Likewise, the temperature could vary ten or twenty degrees and still get a cure from the polyesters, but the curing and cured characteristics of the epoxies will change with as little as a five degree change. All this adds up to making them not too useful under the conditions usually present where a boat is being built.

The polyesters come prepared for many different purposes, such as laminating, casting, coating, etcetera. Each one will have its own characteristics. The viscosity can vary as well as the flexibility of the cured resin, the amount of heat it generates as it cures, its amount of thixotropicness (or ability to not run and sag), and the hardness of the surface of the cured resin. Since the manufacturer worries about getting the desired characteristics into the resin and will be happy to tell you which of his resins to use, we need not concern ourselves with how he does it except for the last, surface hardness. The cure of the normal boat resin is inhibited by air. To prevent the surface from remaining tacky, the resin manufacturer adds wax to the batch at the factory. As the resin cures, the wax floats to the surface and seals off the atmosphere and lets the surface cure hard. This is all very well until it comes time to put on more resin. Then the wax prevents the additional coats from sticking. Therefore, anytime you attempt to add more laminations, or coats, to an already cured lay-up, the wax must be removed either by sanding or by washing with a solvent or, preferably, both.

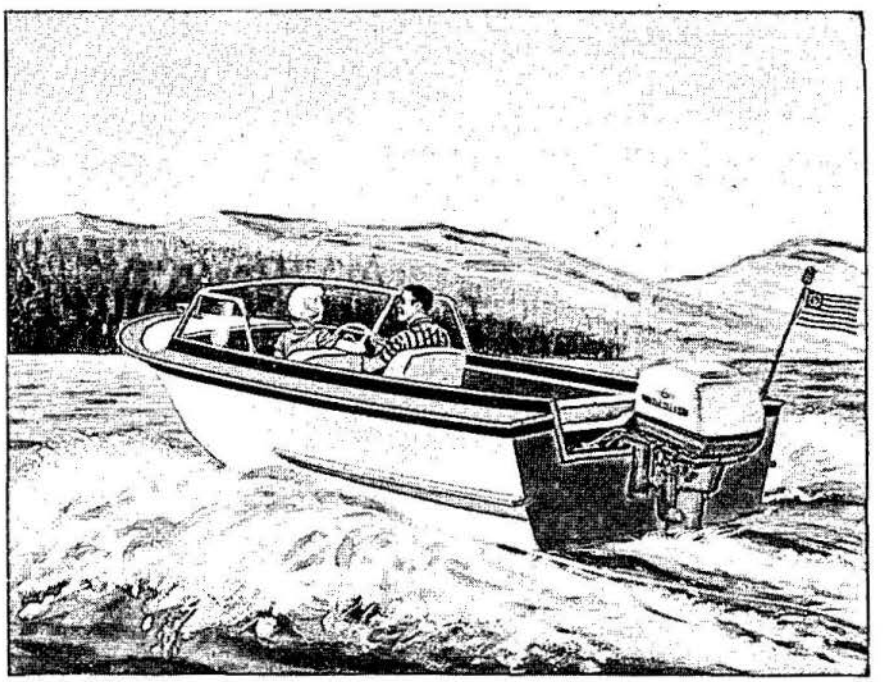
There is little point in going into

the chemistry of the catalyst. Each manufacturer will recommend the one he feels is the best for his product and also supply you with a table of how much to use for what temperature. His recommendations should be followed to the letter as he is as anxious for you to get good results as you are. However, by far the most common catalyst is methyl ethyl ketone peroxide (MEK). This is a colorless liquid that smells even worse than the resin. Since this is a very, very powerful oxidizing agent, and is also extremely inflammable, it deserves every respect in handling. Keep it in a closed container in a cool place away from direct sunlight and open flames. Try not to get any on your hands but, if you do, wash it off right away. Getting it in your eyes, or somehow swallowing some, is an excellent reason to call the doctor. The resin isn't as inflammable or as toxic, but still deserves care. There is no big trick in mixing the two together. Just make sure that you are using the right proportions and the two are thoroughly mixed. Poor mixing will result in a spotty cure with one area setting up too quickly and another curing slowly, or not at all.

The fiber glass reinforcement comes in several forms; cloth, a felt-like mat, chopped fibers, milled fibers, and woven roving which is really just a very heavy cloth. The three most common materials used in boats are 10-ounce cloth, 2-ounce mat, and 28-ounce woven roving. Another very common one is 1½-ounce mat which is used between layers of the roving. Be sure any of these materials that you buy have been treated for use with polyester resin. Fiber glass materials destined for laminating receive a treatment vastly improving the bond between the glass strands and the resin. Untreated cloth is not satisfactory.

Now that the component materials have been described, you can plan the lay-up. It is, of course, impossible to tell you how many layers of what to use since each boat is different. *The Design Manual* mentioned in Part I is as good a guide as any. Consultation with a fiber glass boat builder or a designer may even be better unless you are very familiar with engineering formulae and processes. As a general guide, several points can be listed;

1) All three basic materials should be present. Cloth for surface appearance; woven roving for strength; and mat for bulk and



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SteerMaster is safer, faster, easier to use, simpler to maintain than any other steering system available for outboards. It has none of the sponginess of old-fashioned rope-and-pulley arrangements. Response is instantaneous. There are no loose cables to get tangled up with clothing or seat cushions. The new, improved Tru-Lay Push-Pull cable is factory-lubricated for life. It can be disconnected from the motor in seconds, provides full motor tilt without disabling steering.

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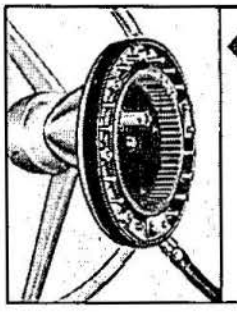

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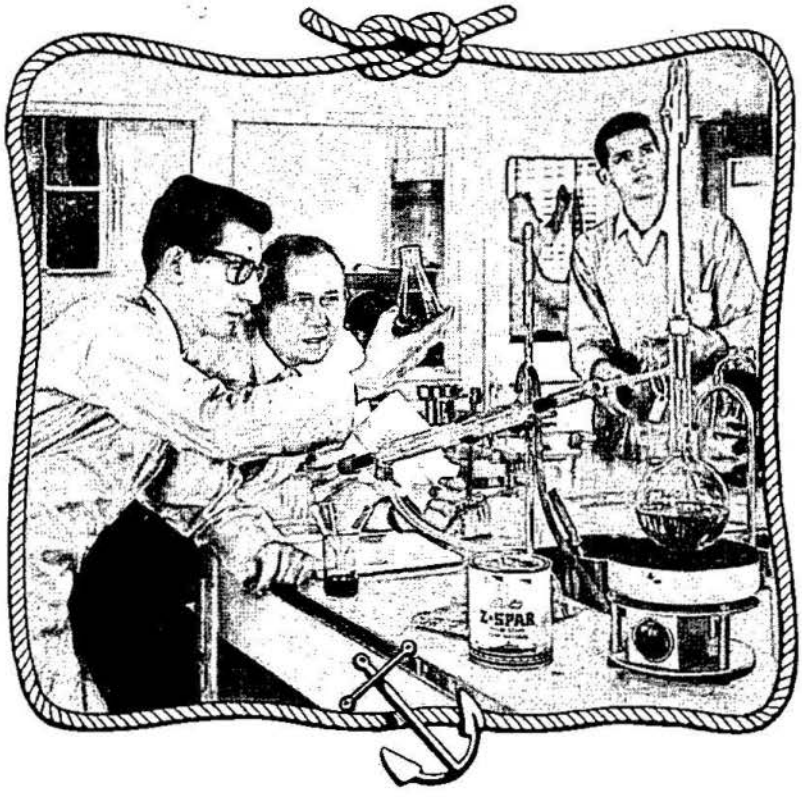

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rigidity, as well as resin dispersion.

2) There should be a layer of mat next to the surface skin of cloth for impact strength.
3) There should be a layer of mat between each ply of woven roving. This prevents resin from building up in the heavy weave of the roving, improves impact strength, adds materially to the stiffness of the hull, and prevents wicking. This last is a weird phenomenon just recently uncovered. If a boat was hit or working and vibration caused a split in the outside of the hull, the water could enter into the weave of the roving. Capillary action would then cause the water to wick its way along the roving to leak into the hull some other place. A popular class of forty footers had this happen. The chain plates leaked and defied every effort to stop the leak until someone discovered it was a break in the fiber glass around the shaft log.
4) The laminate should be balanced. That is, all the mat should not be outside and the roving inside. They should be interspersed throughout with the aforementioned mat and cloth layer on the outside and a layer of cloth on the inside.
5) There should be a minimum of overlaps, not only for strength but they are an awful nuisance to sand down. In any case, *you* should never have two overlaps in the same place except for the centerline. All necessary overlaps should be at least two inches.
6) The various layers should run in different directions. As an example, on the twenty-four footer one layer of roving ran fore and aft while the other two opposed each other on the diagonal.
7) Almost always there should be an increasing amount of fiber glass as the centerline is approached. This is particularly true of sailboats.
8) The percentage of fiber glass to resin should be kept as high as possible without the lay-up being starved. The keynote is enough resin but just enough. With good workmanship, you should be able to approach fifty percent fiber glass over a male mold such as we are using.

After you have designed your lay-up, you can order your materials. There are many distributors of FRP materials throughout the country that have had wide experience in servicing amateur builders. Their help will prove invaluable and I earnestly recommend your buying from them rather than approaching the basic manufacturers. You may have to spend a little more, but the local jobber, or dealer, will be much more familiar with the problems of boat building and the help you can get will more than offset the extra money. In ordering, be sure to get plenty. I'd allow at least twenty percent for waste.

When the materials arrive, there are a couple of things to look out for. First, never stand a roll of fiber glass on end. For some reason it will develop wrinkles and kinks that just won't come out. The catalyst, as mentioned, should be stored in a cool, safe place. The resin. also, should be kept as cool as possible, not so much for safety, as to prolong its life. A great help is a horse to lay the resin drum on with a spigot. Two other great aids are racks for the fiber glass rolls, and a long cutting table if you have space for it. The rest of the tools you will need are shears, squeegees, cheap paint rollers and large cheap brushes, pails for the resin, the old clothes you've been saving, a lot of

acetone to wash up with, and a weak mind and strong back.

Now, at long last, you are ready to build your boat. The first thing to do is to cut up all the pieces of fiber glass that you are going to use. Tag each one so you will remember where they go and stack them up in the order in which they go on the boat. You can also mark the mold as a guide to locate the pieces.

The next and last step before molding is to enlist the help of some unsuspecting friends who have expressed a desire to learn how to mold a fiber glass boat. They may never talk to you again but, hopefully, they will be too honorable to quit half way through and you'll have your boat built. We found it best to teach one of them how to mix the resin and let him do that and feed the others the fiber glass as needed. Ideally, if you can find enough helpers, have two working each side while you pitch in wherever is needed.

The first step in molding is, of course, mixing a batch of resin. While someone is doing this, open all available windows and doors and turn on whatever ventilating device you may have. This will accomplish two things. First it will cool the room down and thus prolong the pot life of the resin and it will also keep the smell down to a minimum. Now, take a deep breath and dive in.

Roll a heavy coat of resin on the mold and lay on the first piece of material. The object is to get it down flat and smooth with no air trapped underneath. You can tell the material is saturated when it becomes transparent and all but invisible. With your shears, trim off the excess material and make whatever cuts are necessary to make the material form smoothly over the hull. You'll be surprised how few you'll have to make. The big trick is to work from the center of the piece and smooth it out towards the edges. A squeegee is of great help in doing this.

After the one piece is in place, the next one can be draped into place. Overlap the first by about two inches. There is no reason to try for exactness. It is far more important to have it conform smoothly to the hull with as little air as possible trapped. After the one layer is in place, roll on more resin and proceed with the second. This and the remainder of the plys have to be put on carefully so as to not disturb the pieces already in place. It gets worse as you go along. Not

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only because there are more layers to disturb, but because you're getting stickier all the time. After a couple of layers are in place you'll find that you don't even need to hold on to your tools. The trick is to let go of them.

There isn't really much more I can say about the molding process. Just keep making sure that the material is completely saturated and there are no voids. The handiest guide is to keep the lay-up transparent. If you can still see the mold, you're all right. Most production molds are a dark color to aid in spotting an air bubble. Needless to say, the smoother you can keep the whole thing, the less trouble you will have in the finishing steps. One thing to do, after all the plys are in place, is to squeegee the whole lay-up as hard as you can. This will force any remaining air out and force the laminations closer together which will add materially in the strength of the boat. It will also result in a smoother surface. After you've done this, and you've inspected the lay-up thoroughly to touch up any minor flaws, you're finished. A good, hard cure will take several hours, provided the resin was properly mixed, so you might as well wash up as best you can and go home and rest.

When the hull is hard, you can proceed to finish it. I think it is much easier to do your finishing now, before the boat is removed from the mold and it is still upside down. Smoothing up the hull is one of the tougher parts of fiber glass boatbuilding by this method. It takes a lot of hours, requires great care in getting the hull truly fair, and the ground fiber glass will really make you itch. In the light of this, get yourself a good respirator, and clothing that really covers you up. Put rubber bands around your sleeves and trousers to prevent the particles from getting in. In short, cover up.

The actual finishing process is composed of grinding the surface as smooth as possible without taking off too much material, and then building up the low points with more fiber glass or a plastic putty. After you have done this a few times, the surface should be fair and reasonably smooth. Then you can put the final finish on using the same methods as you would with a wooden hull.

A couple of tricks we've picked up may be of value to you in finishing up your hull: We found that a heavy-duty disc sander makes short work of the major lumps such as overlaps and the like, but a belt sander does a much better job of fairing. Unless your eye is extraordinarily good, you'll have trouble seeing the high and low spots and a belt sander will find them for you. Use it on a 45 degree angle one way and then the other, finishing up fore and aft. This will soon show you where the low spots are. In applying the additional putty or fiber glass, we found the best thing to use was a wide squeegee. This will bear on the high spots, fill in the lows, and at the same time retain enough flexibility to conform to the basic hull shape.

This whole thing may sound like a lot of work, and it is. But, if you go at it slowly and with patience, you'll be rewarded with as good a hull as ever came off a production line.

Next month we'll delve into the problems of making a boat out of your hull.

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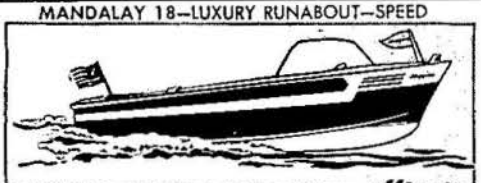

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ALTITUDES AND INSTRUMENTS

continued from page 19

Another instrument which was developed about this same time was the Nocturnal, or night disc. (Figure D.) The chronometer had not yet been invented and time was kept aboard ship by means of a half-hour glass. It was the helmsman's duty to keep an eye on the half-hour glass, and to turn it over when the sand ran out. At this time he would also ring the appropriate number of bells. Sometimes, when it was cold or wet, the helmsman would turn the glass over early in an attempt to end his watch sooner. This would cause the captain to think that he had been sailing longer than he actually had been, thus introducing error into his calculations. However, using the Nocturnal, the captain could tell the time at night. He did this by sighting on the North Star through the hole in the center of the instrument. At the same time, he would align the long arm of the instrument on the star Kochab. He could then read time on the body of the night disc. This instrument also could be used to determine altitude corrections for sights on Polaris.

In 1714 the London Board of Longitude offered a sizeable award to the person who found the solution to the problem of determining longitude at sea. If longitude were to be found, a more accurate altitude measuring instrument would be needed. Two men started working on instruments which used the principle of double reflection. This is the principle upon which today's sextants are based. One of these men was Thomas Godfrey, a Philadelphian glazier. The other was John Hadley, a member of England's Royal Society, and a famous maker of precision optical instruments. Both men worked independently, and they both submitted instruments to the Royal Society in 1730. The Society recognized both men, gave them equal awards, and declared 1731 the year that the principle of double reflection had been invented. It was later discovered that Sir Isaac Newton had sent a description of a double reflecting instrument to Edmond Halley, the Astronomer Royal, in 1700. Just why Halley never made this public is not known.

Even though Godfrey and Hadley received equal awards, Hadley's instrument was more practical, and was the one mariners finally accepted. In fact, Hadley's design was so successful that the basic layout has not been changed for over 200 years! About the only major improvements that have been made have been the addition of the endless tangent screw and the micrometer drum.

The principle of double reflection is this: if a ray of light undergoes two reflections in the same plane, the angle between the first and last directions of the ray of light is twice the angle that the two mirrors make with each other.

On the sextant, one of the mirrors is movable and the other is fixed. The movable mirror is called the index mirror and the other mirror is called the horizon glass. The other basic parts of the sextant are the frame, the limb, index arm, and telescope.

We have come a long way in advancing from the quadrant to the sextant, but it would be foolish to think we have reached the ultimum in our present instrument. Recent experiments with the sextant show that the instrument can be made to give results more accurate than the tables presently in use by the majority of navigators. The high accuracy of the experiments resulted in part from the use of seven and one-half and twenty power telescopes together with highly accurate calculations.

The sextant has been in use a long time, over 200 years. Perhaps it is time we added the next refinement. If we do, you can bet it won't last 200 years without change.

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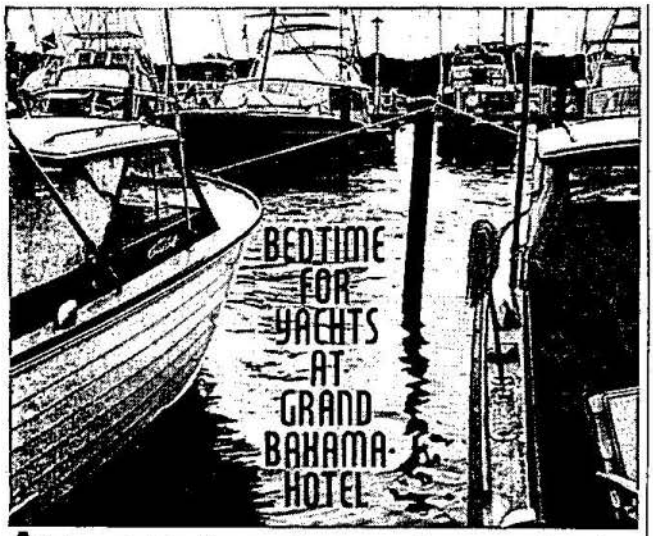

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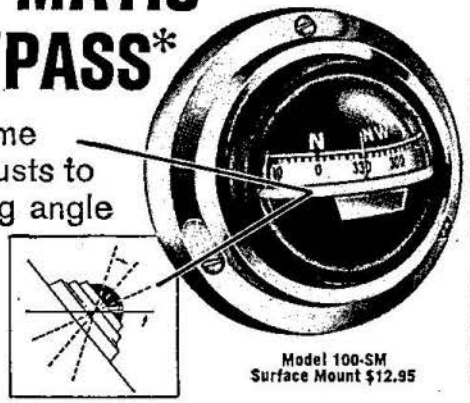

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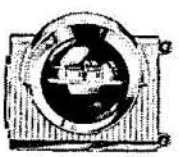

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THE CRUISING CATAMARAN

continued from page 27

wide enough, or I had to take one provided for some huge yacht and had to pay accordingly. Also marine ways which could haul her with her width of beam were expensive and scarce. I needed another, smaller boat.

Of course I wouldn't go to the extreme that friends of ours, Ralph and Tunni Coolidge, did for whom I designed a twenty-foot catamaran, strictly a day sailer. They nevertheless managed to move aboard with sack and pack, including Tanoa, a parakeet. They lived and cruised happily on their Poco-Poco for over two years. (See The Rudder, July 1960.)

So I went back to the drawing board and started designing the Ideal, ideal catamaran cruiser. I limited the overall length to 32 feet; the beam to 12 feet 6 inches since most pilings are spaced on fifteen-foot centers; the draft to two-feet even. On the smaller boat the ketch rig was abandoned for the more efficient sloop rig. Some comfort was sacrificed for more speed, and lightness of construction was the *leit-motif* even more than on Luna-Tiki.

After again building a scale model, this time only two feet long, which I towed and sailed all over the St. Petersburg yacht basin, and which outsailed me easily in my eight-foot pram, Tapatai was built and launched in 1960.

She has the same general layout, but the main cabin is only 6 feet by 11 inches, with 5 feet 2 inches head room, and the hulls are much narrower.

A wishbone mast was chosen to eliminate much standing rigging, provide an undisturbed entry of the main luff and do away with the problem of chafing. Further, the down

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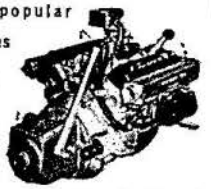

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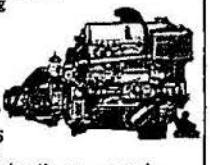

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thrust of the mast is transferred to the hulls and keels which *seems* as logical on a catamaran as on any boat.

Since windage is most detrimental forward, the bows were recurved as on canoes, yet flaring on top to retain the necessary reserve bouyancy.

Besides the underwater window of 1 inch unbreakable glass, I installed an over-water window in the main cabin floor which allows fishing and gigging right from our "living room" and can also be used as garbage disposal and emergency head.

Over 100 shelves give abundant storage space and make the hulls immensely strong.

Tapatai has cruised many, many miles in good weather and bad in Florida and the Bahamas. She has often logged nine to eleven knots from point to point and achieved bursts of speed of fourteen knots. She would undoubtedly do even better if she had a large Genoa.

Her 25 horsepower outboard will push her along at a cruising speed of seven-and-a-half knots, and she can do ten knots with it on dead-calm water.

In closing I will try to sum up what I consider the advantages of a cruising catamaran: A well designed cruising cat has the inherent seaworthiness of her Polynesian ancesters who migrated over the vast Pacific with their double proas and lakatois. The average cruising speed is above that of her single-hulled sister, and occasional bursts of speed give one an exhilarating thrill.

If your wife is a "boat-widow," she might be converted into a proficient mate, since a catamaran heels very little, is steady in a seaway and doesn't try to turn turtle when stepping aboard. Your wife will also appreciate the airiness of the cabin where all around visibility will prevent her from getting claustrophobia and "cabin-fever."

The shallow draft allows visiting out-of-the-way places, opening up a new world closed to the ordinary cruiser.

Exceptional accommodations and great storage capacity are outstanding features in even a relatively small boat like Tapatai.

Light displacement assures liveliness and no heavy gear has to be employed to get her off when running aground.

When properly constructed, her fiber glass skin provides absolute tightness and requires almost no maintenance.

Last but not least: with watertight compartments, all wood construction and built-in foam she can be the safest boat afloat—there is no ballast to drag her down.

Tapatai comes as close to the ideal cruising catamaran as possible, but, as I said before—the human mind is never at rest—and designing is in my blood, and . . . but there we go again.

The photogenic young lady above is having her picture taken aboard the Aristo-Craft Funliner, the only model turned out by the Atlanta Boat Works, 665 Plyant Street, N.E., Atlanta 6, Georgia. By concentrating on one boat the manufacturer claims that they can give more quality at a lower price, which in the case of the Funliner is $995

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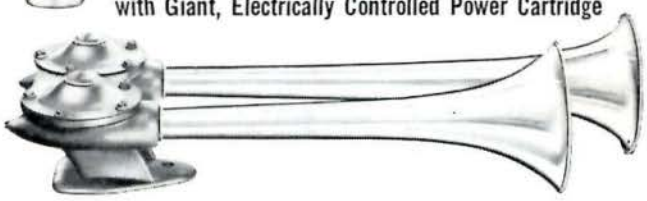

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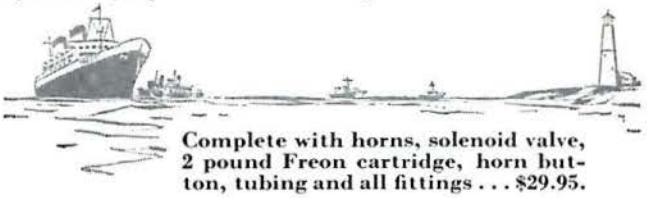

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JOURNALISM IN ONE EASY LESSON

continued from page 46

challengers had been working for nearly two years and a half to a close timetable to be ready by September, 1963.

"If they are now asked to accept a year's postponement this would be extremely costly to them (the prospective challengers) and they would have the greatest of difficulties in keeping their crews together," wrote Mountbatten. The N.Y.Y.C. officers remained firm.

So much for international club relations. Let's get back to dinner. Commodore Pratt was one of the three who figured in the prize presentations. He gave out the awards related to the cup competition. Roosevelt distributed those for the cruise and the annual regatta. They seemed to number hundreds, but didn't. Then Dickerson read resolutions of esteem that were sent to Sir Frank Packer, head of the syndicate that built Gretel, and to the challenging club, the Royal Sydney Yacht Squadron. It was a wordy evening.

Henry D. Mercer, whose syndicate owns Weatherly, received the Chandler Hovey Gold Bowl, a permanent symbol of 12-Meter sailing supremacy that is at stake every season, cup racing or no. It really is of gold. With it went a heavy silver tray. Every member of Weatherly's fifteen-member working "team" got an inscribed crystal ashtray. Emil (Bus) Mosbacher, Jr., her skipper, got a citation as well as an ashtray. We've never seen him smoke.

The new Lipton Trophy for the second best defense candidate went to E. Ross Anderson and Robert W. Purcell, owners of Nefertiti, the Boston boat that was Weatherly's foremost rival in the selection trials. Paul V. Shields, Columbia's owner, and Hovey, who owns Easterner, were given fancy illuminated resolutions of gratitude for their part in

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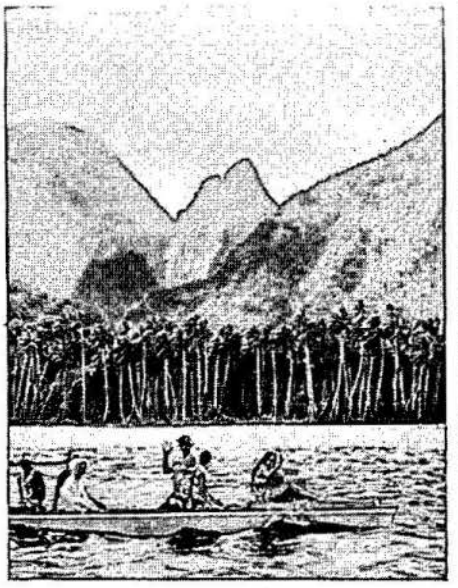

Lat. 17° 38′ S., long. 149° 25′ W.

We know a retired sailor, a navigator, who has these map coordinates carved into a board of polished teak mounted above a window that looks out on the sea. Ask him where in the world the cryptic figures represent and he'll say, with a faraway smile, "Paradise." □ The "paradise" he remembers so well is Tahiti. You can see three views of it above. And of Tahitians. But, in this case, a visit is worth a thousand pictures. Because you can't realize just how lovely this island is and how uncomplicatedly happy its people are, until you've been there. □ Sail a few hours out from Tahiti and you're at Moorea, an island with what is possibly the most beautiful view on earth—Captain Cook's Bay. Sail two days out (or make a two-hour flight) and see Bora Bora, a place even more removed from civilization than Tahiti. □ TAI takes you away to all this via DC-8 Jet. There are departures twice a week, flying non-stop Los Angeles-Tahiti. (Jet service non-stop from Honolulu to Tahiti, too!) And TAI also flies to other delightful, varied South Seas and Far East destinations. Fiji. Nouméa. Auckland. Sydney. Djakarta. Singapore. Bangkok. Talk it over with your Travel Agent. Or call Air France.

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the defense effort. Neither was able to be present.

The prizes distributed by Roosevelt included the Cygnet Cup, always a hush-hush award, first made public at the dinner, to the yacht considered to have the best all-around performance during the cruise. The race committee voted it to George R. Hinman, a former commodore and the current president of the North American Yacht Racing Union. His Sagola was considered best for an 8-3-3-2-1-1-3 record in the crowded fourth division. Hinman wasn't present, either.

Shown ready to depart via Air France, is the group that participated in The Rudder Tour of Tahiti. They are Mr. and Mrs. Willard Bass, Jr., of Washington, D.C., Mr. and Mrs. Lionel D'Arcy of Victoria, Canada, Mr. and Mrs. Colby Dill of Chester County, Pennsylvania, Mr. and Mrs. Frank Cayce of Florence, South Carolina, Mr. and Mrs. John Esbenshade of Pasadena, California, Mr. and Mrs. George Morrill, Jr. of Portland, Maine, Mr. and Mrs. Frank Scott of La Jolla, California, and Mr. and Mrs. Benjamin Smith of Scarsdale, New York. At the far right is Kevin McDonnell of Linblad Travel, Inc., New York, who handled the travel arrangements

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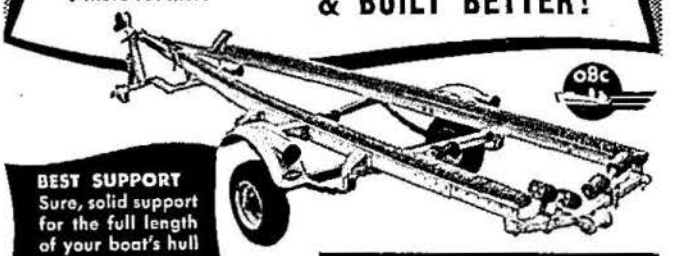

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INVENTIONS IN THE BOATING WORLD

continued from page 23

can be adjusted to ease the sheet before the boat is damaged. As a capsize preventer, application is obvious.

Lockheed Aircraft Corporation is active in the hydrofoil boat field. The patent shown in Figure 11 is assigned to Lockheed by inventor Reinhard N. Lahde, Tarzana, California. The drawing is schematic, the telescoping rods are too heavy looking for the boat.

Reinhard's patent is interesting reading because it reviews the art of stabilizing hydrofoil boats. In his invention, Reinhard controls the height of hull above the waves by means of a taut wire stretched from a jockey arm at the end of a pole to the hydrofoil strut. For stability, two poles and foils are used, one to starboard and one to port. Tight wires offer little resistance to the speeding craft, yet can "feel" the water and craft, yet adjust the hydrofoil angle of attack to maintain hull height at optimum distance from water surface.

Floyd W. Farrington, 1638 Wynne, San Angelo, Texas, says that his patented boat, Figure 12, is good in hard, fast turns. It resists side-slip. Bottom contour is the basis of Farrington's patent. He has made a slightly rounded bottom with flat chines the length of the boat. Near the transom are two fins forming water chutes. The inventor states that the fins in conjunction with the chines make the boat stable, keep it from skidding and slipping in fast turns.

It is apparent that the absence of a center fin keel makes the boat useful in shallow water, easy to beach and trailer.

From Hollywood, Florida, comes a different kind of hull invention. Figure 13 shows drawings from a patent granted Andrew J. Miller. The invention is a hull form being a displacement boat when at rest or idling through the water, but becoming a planing machine or hydrofoil boat at higher speed. At rest, the boat floats with conventional displacement. At speed, it planes or skis over the water on the side surfaces, the entire center section being lifted clear and offering no water resistance.

Ψ Ψ Ψ

Pelicans Come to East Coast

In our October issue we ran a little piece about the Pelican class which has been proving quite popular in the San Francisco area. Now we find that is an East Coast group under the direction of William B. Marks, 104 Sea Cove Road, Northport, Long Island, New York. All interested parties may address their inquiries to him.

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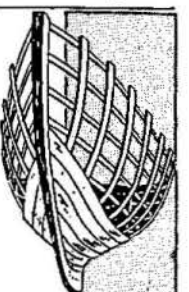

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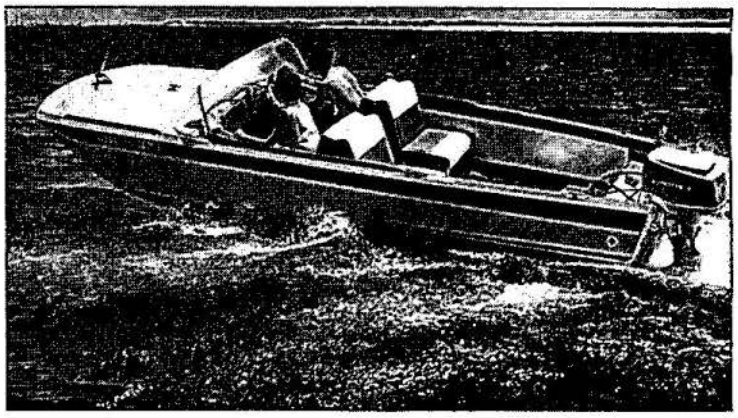

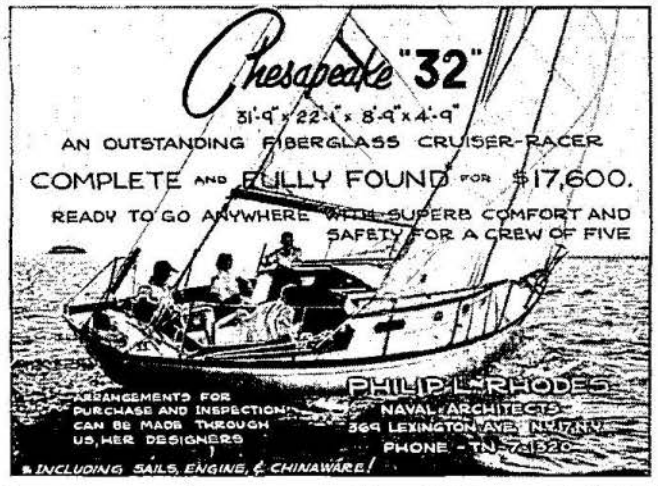
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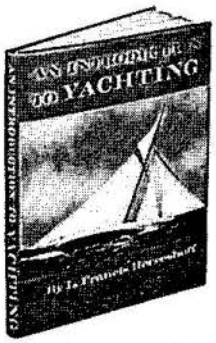

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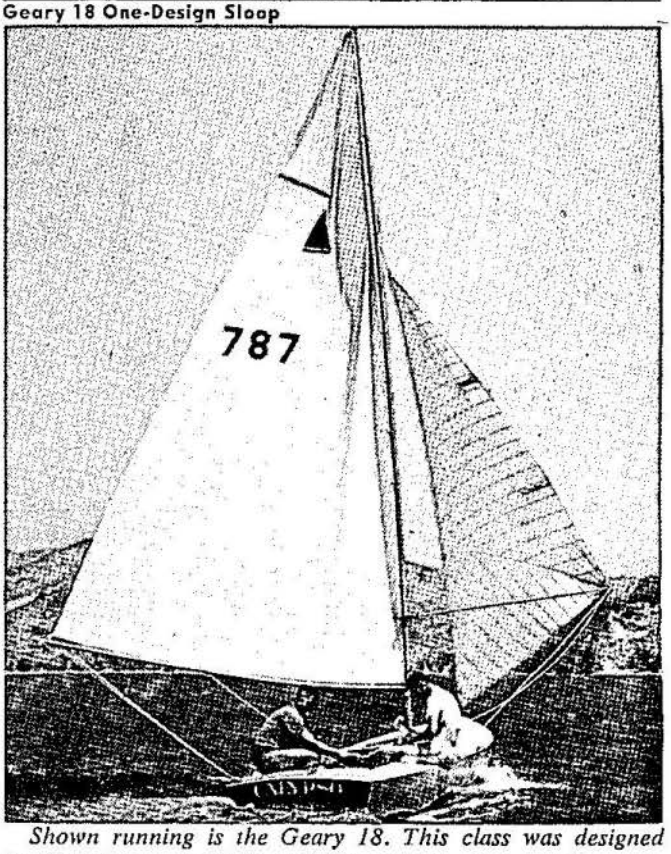
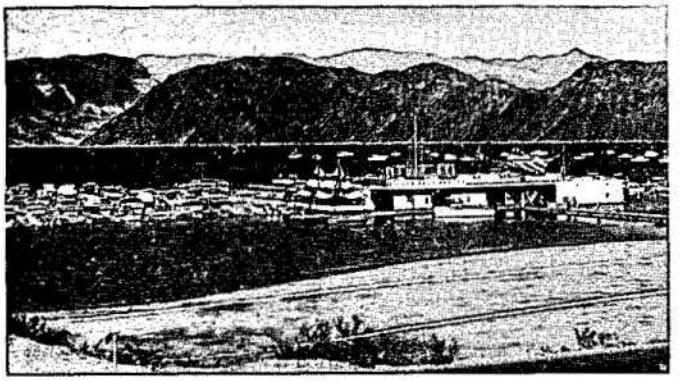
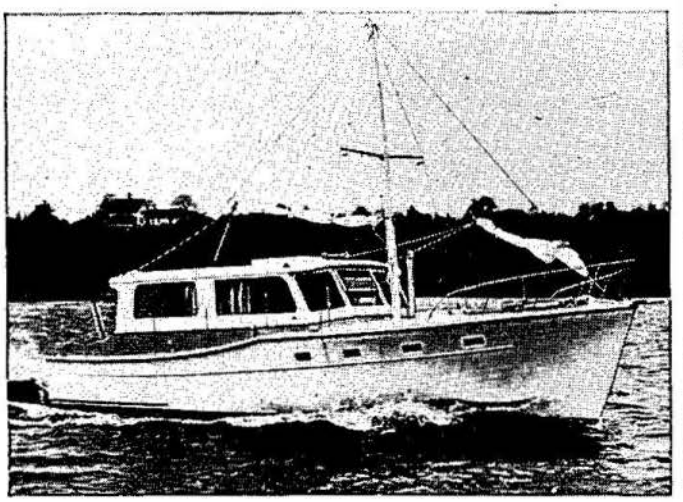
Geary 18 One-Design Sloop



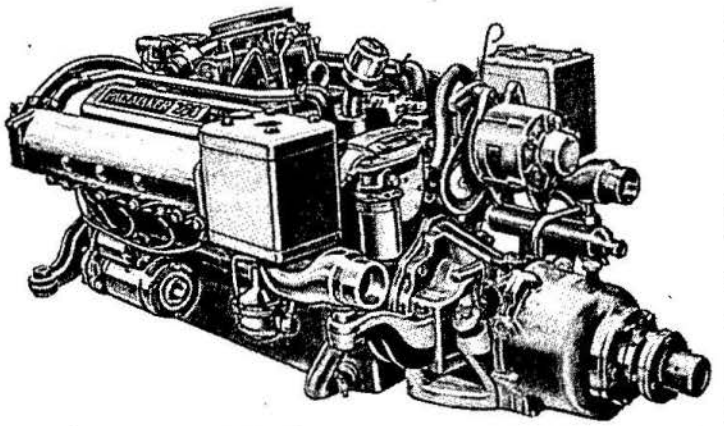
Shown running is the Geary 18. This class was designed by Ted Geary in 1928 and has proven very popular, particularly on the West Coast. She is 18 feet long, 5 foot 3 inches beam, carries 157.5 square feet of sail, and has a weight of 525 pounds. She is built by the Delta International Co., Financial Center Building, Oakland 12, California



Capable of handling nearly 400 boats, the 3 acre floating complex of the Lake Mead Marina was recently completed. It is located west of Boulder Dam, on 150 mile long Lake Mead and houses a floating restaurant, coffee shop, and marine supply store. A novel feature of the marina is that it moves back and forth two thirds of a mile during the year to compensate for the extreme fluctuation in water level



40 ft. motor sailer, hull designed by George Stadel and interior planning and deckhouse by John G. Alden. Powered by a 6-cylinder Barr Marine Diesel of 96 shaft hp., the craft cruises at 10 knots with a top speed of 12 knots. Built by Kennebec Yacht Building (Robinhood, Maine) for Alexander Cameron, Boston



Above is one of the three new Pacemaker engines being introduced this year by C. P. Leek of Lower Bank, New Jersey. This one is rated at 280 hp and among its other features is a combination muffler and back water trap called an exhaust pot. This prevents water from entering the manifolds in a rolling sea or when decelerating rapidly

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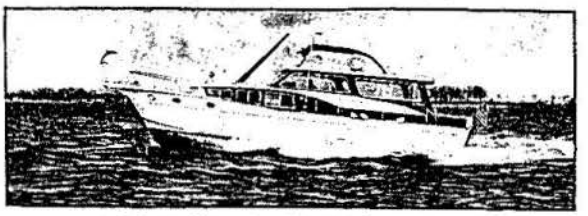

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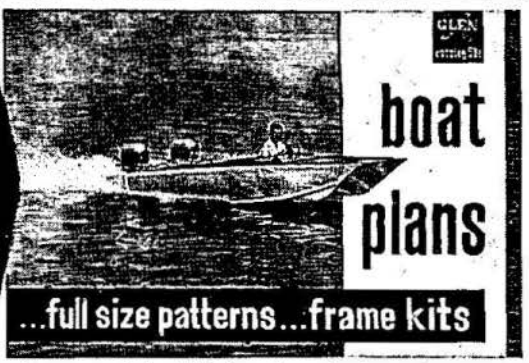

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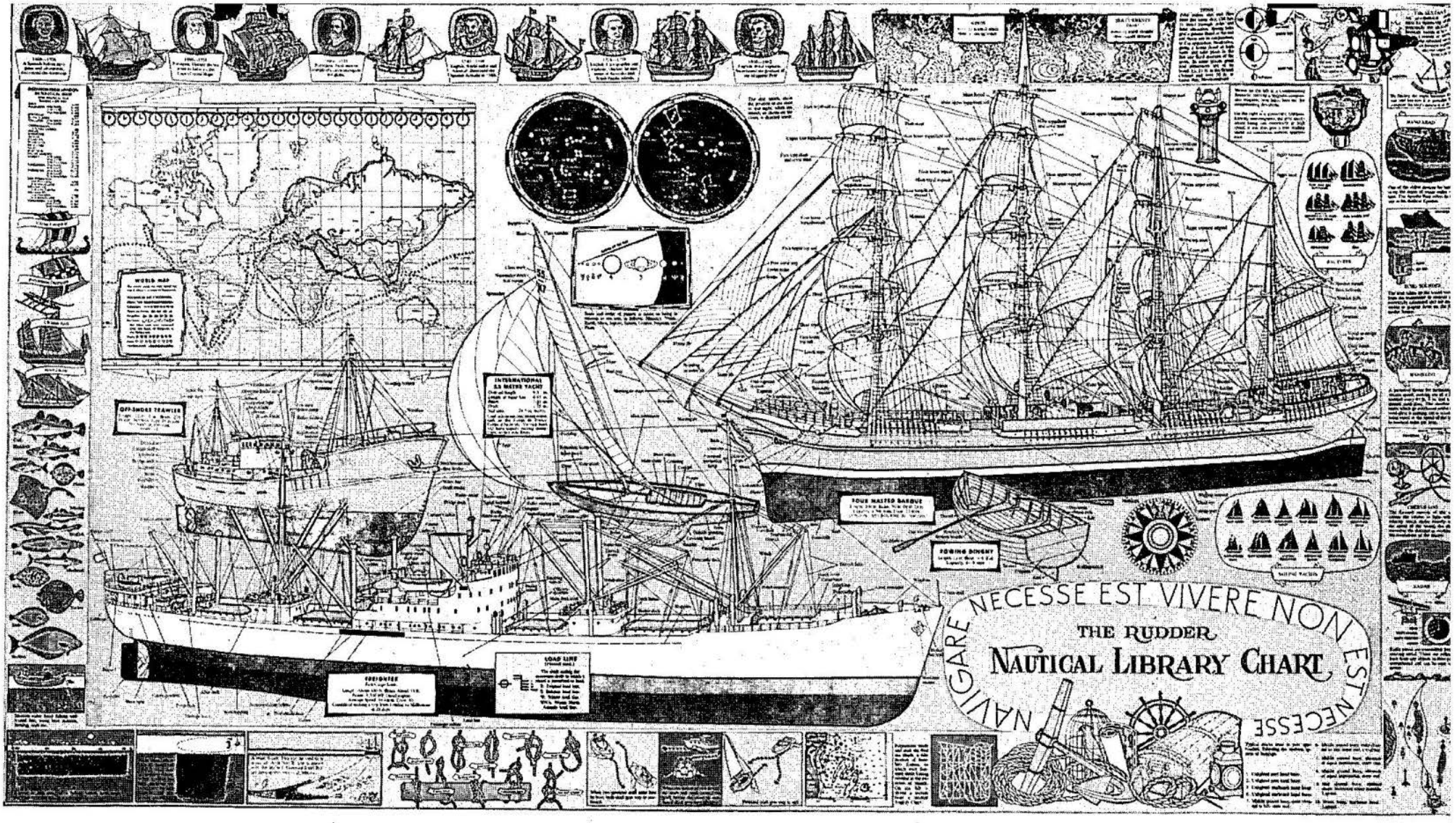

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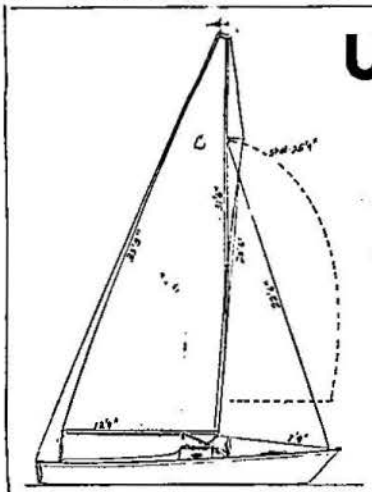

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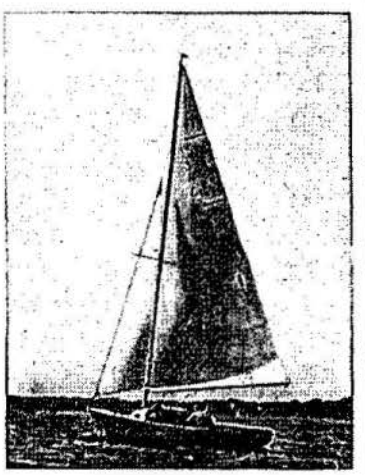

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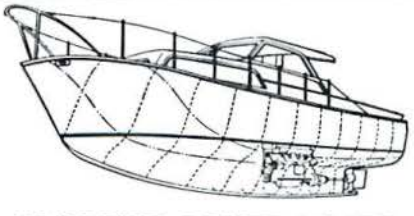
This well sheltered yacht basin is the Glen Cove Marina, Inc., in Glen Cove, New York. The area on the left will be dug out to accommodate another row of boats, end eventually everything will be landscaped and the basin enclosed with an embankment. On the right, and not shown are large modern storage sheds, and this well integrated operation includes a marine hardware store and a boat building shop

Ψ Ψ Ψ

Towing and Salvage Service

Captain Elwell B. Thomas, for many years owner and operator of the Thomas Boat Yard and Livery in Stonington, Connecticut, and author of an excellent book on boat yard operation, has established The Marine Company of Florida to provide a towing and marine salvage service.



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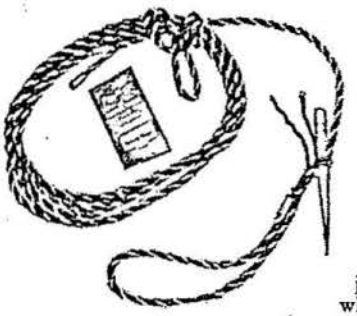

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For further information write The Marine Company of Florida, Inc., P.O. Box 3228, Bahia Mar, Fort Lauderdale, Florida. Phone Jackson 3-8700.

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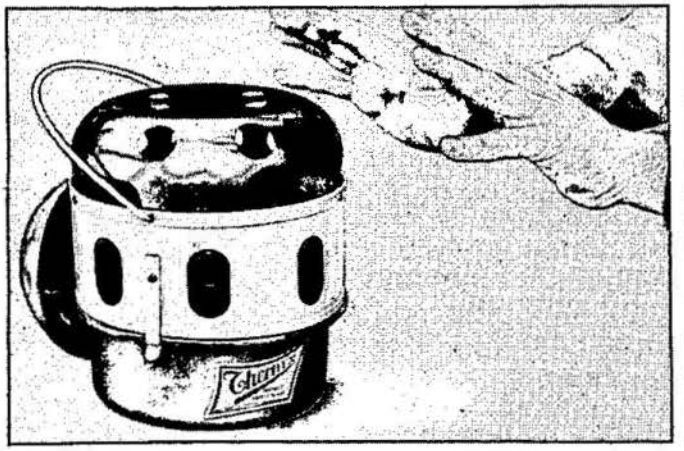

The Model 30 heater has a rate output of 3,000 btu per hour and is said to be safe for use aboard boats. Heat is supplied by a patented method of catalytic combustion which causes no flames or fumes. The Model 30 heater retails for $27.95 and more information about this or any of their many other models can be obtained by writing to the Therm'x Corporation, World Trade Center, San Francisco, California

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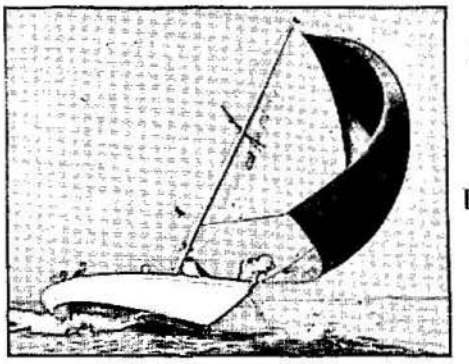

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30' 1960 PACEMAKER SPORTFISHERMAN — Fly Bridge — 215 H.P. Gray (1961) — Sleeps 4 —Galley — Dinette — Compass — Depth Sounder — Outriggers — Electric Refrigerator

30' 1961 PACEMAKER SPORTFISHERMAN — Sedan Enclosure — 215 H.P. Interceptor — Sleeps 4 — Galley — Dinette — Compass (2) — Depth Sounder — Ship to Shore — Bow Rail — Fly Bridge Rail — Chart Table — Extra Gas Tank—Bendix Shield for Radio

29' 1957 PACEMAKER — 125 H.P. Chrysler — Bunks — Galley — Head — Pilot Seats (2) — Compass — Aqua Feeder Sudbury Vent

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28'6" 1946 IRELAND TRUNK CABIN — 100 H.P. Gray — Fresh Water Cooled — Bunks — Galley — S.U. Head — Compass — Swim Ladder

26' 1955 CORRECT CRAFT — 135 H.P. Gray — Navy Top — Side Curtains — Ship to Shore —Sleeps 4

25' 1955 OWENS HARDTOP EXPRESS — 185 H.P. Flagship (1960) — Bunks — Galley — S.U. Head — Pilot Seat — Searchlight — Compass — Cockpit Cover

25' 1960 CHRIS-CRAFT CAVALIER — 185 H.P. Chris-Craft — Bunks — Galley — Head — Bow Rail — Navy Top — Side Curtains

25' 1959 CHRIS-CRAFT CAVALIER — 185 H.P. Chris-Craft — Bunks — Galley — Dinette — Bow Rail — Navy Top — Side Curtains — Cockpit Cover

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23' 1959 CHRIS-CRAFT CAVALIER — 185 H.P. Chris-Craft — Sleeps 2 — Galley — Stove — Head — Bow Rail — Searchlight — Compass —Cockpit Cover—Navy Top—Side Curtains

23' 1958 MARBLEHEAD N.T. EXPRESS — 155 H.P. Nordberg — Bunks — Galley — Stove — Compass — Cockpit Cover — Stern Seat and Cushion

21' 1951 CHRIS-CRAFT CRUISER — 95 H.P. Chris-Craft — Sleep 2 — Cockpit Cover Navy Top — Side Curtains — Compass — Pilot Seat

21' 1955 OWENS CRUISER — 66 H.P. Flagship — Bunks — Galley — Pilot Seat — Compass — Full Keel

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29' 1961 ULRICHSEN-WILSON SKIFF — Twin Gray's 170 H.P. each — 35 W. Ship to Shore —Galley — Dinette — Depth Finder — Fly Bridge — Drop Curtain — Muffler — Sleeps 4

27' 1958 ULRICHSEN-WILSON SKIFF — 225 H.P. Gray — Sleeps 3

27' 1960 OWEN SKIFF CRUISER — Fly Bridge — 185 H.P. Flagship — Sleeps 4 — Compass — Searchlight — Fishwells

27' 1960 ULRICHSEN-WILSON — 125 H.P. Chrysler — Bunks — Galley — Dinette — Bow Rail — Compass — Ship to Shore — Alternator — Depth Sounder — Fishwells

26' 1957 LUHRS HARDTOP SKIFF — 125 H.P. Chrysler — Bunks — Head — Pilot Seat — Pulpit — Compass — Drop Curtains — Rod Holders — Outriggers

26' 1959 ULRICHSEN FLY BRIDGE SKIFF — 125 H.P. Chrysler — Sleeps 3 — Galley — Searchlight — Compass — Ship to Shore — Depth Sounder — Outriggers — Fighting Chair — Gin Pole — Winter Cover

26' 1947 CHRIS-CRAFT DAY BOAT — 145 H.P. Chris-Craft (1958) — Bunks — Head

24' 1959 SILVERTON OPEN SKIFF — 109 H.P. Gray — Compass — Cockpit Cover — Searchlight — 2 Rod Holders — Sleeps 2

24' 1957 A.N.A. SKIFF — 95 H.P. Chris-Craft — Napy Top — Two Bunks — Head

21' 1956 JAFCO UTILITY — 125 H.P. Chrysler —Compass — Navy Top

21' 1948 ZOBEL SKIFF — 115 H.P. Chrysler — Navy Top — Side Curtains — Ground Plate

18' 1949 LYMAN UTILITY — 45 H.P. Gray — Navy Top

18' 1958 COAST OPEN SKIFF — 220 H.P. Chevrolet — Electric Bilge Pump — Anchor & Line —2 Rod Holders

18' 1956 CHRIS-CRAFT SKIFF—60 H.P. Chris-Craft — Navy Top — Side Curtains — Cockpit Cover

18' 1956 CENTURY SKIFF — 75 H.P. Gray — Navy Top — Side Curtains — Hydraulic Steering — Dual Controls

18' 1955 CHRIS-CRAFT UTILITY — 60 H.P. Chris-Craft — Navy Top — Side Curtains — Cockpit Cover

BROKERAGE BOATS

42' 1955 MATTHEWS — Flying Bridge Convertible Sedan — Twin 225 H.P. Chryslers $30,000.00

42' 1955 CHRIS-CRAFT COMMANDER, Customized Sedan — Twin 190 H.P. $16,500.00

37' 1956 COLONIAL EXPRESS — Semi-Custom — Twin 125 HP. Chryslers $10,950.00

35' 1956 CHRIS-CRAFT SKIFF — Hard Top Express — Twin 130 H.P. Chris-Crafts $8,250.00

35' 1956 CHRIS-CRAFT CONSTELLATION — Twin 145 H.P. Chris-Craft F.W. $12,500.00

35' 1956 CHRIS-CRAFT — Hard Top Express — Twin 130 H.P. Chris-Crafts $8,800.00

34' 1951 CHRIS-CRAFT — D.C.F.B. — Twin 210 H.P. Chryslers $10,000.00

33' 1960 PACEMAKER EXPRESS — Flying Bridge — Twin 125 HP. Chryslers $13,500.00

30' 1958 RICHARDSON — Hard Top Cruiser — Twin 125 H.P. Chryslers $10,500.00

29' 1958 PACEMAKER EXPRESS — Fly Bridge — 225 H.P. Gray $7,500.00

29' 1958 PACEMAKER EXPRESS — 125 H.P. Chrysler $6,500.00

29' 1955 PACEMAKER EXPRESS — Twin 95 Chryslers $4,900.00

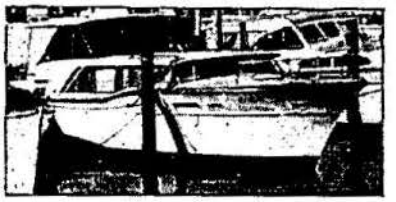
20' 1961 ABBY FIBERGLASS SKIFF — N.T. Utility — 260 H.P. Interceptor $4,500.00

Is a Boat an Investment? . . .

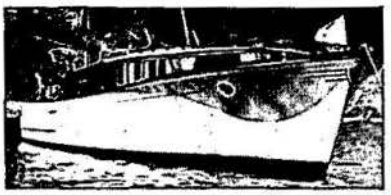
We have heard people propound theories that a boat is really an investment. Usually such persons can cite instances where certain friends of theirs bought boats, say, ten years ago or more and now are able to sell them for more than they cost. Such cases occasionally happen but are not common, and we are sure that, from a purely monetary standpoint, there are better hedges against inflation than boats. Certainly, a boat is bought for a different purpose — for pleasure and relaxation, of one type or another. So let us consider it an investment in pleasure.

Before completely dismissing the monetary angle, however, let us try briefly to appraise the proper relationship of a boat as an asset in a man's holdings of real and personal property. It definitely is a real and salable asset and one which will maintain its value to a surprising degree for a long period. There are two principal factors which are most important in maintaining the value of a boat, that is, in minimizing its depreciation. First, is prudent selection of the boat that is purchased; prudent from the standpoint of selecting a boat of good quality (this cannot be done by buying the cheapest boat available that fulfills a certain size goal), selecting a boat that adequately meets the buyers' use requirements and, finally, selecting a boat well designed in the classic tradition so as not to become prematurely obsolete. Second important factor is maintenance. This is often neglected. Boatmen who complain about the excessive depreciation of boats — and depreciation can very easily be by far the biggest cost of boat ownership — are usually the ones who contribute nothing in time or money toward keeping their boats properly maintained.

So, give your boat a break. Keep it up in tip-top shape, and its value will keep up as well. A good boat will last a lifetime if given proper care — and may very well be worth as much at the end of the lifetime as it was at the beginning. And what else can equal it as an investment in pleasure, as an investment, perhaps, in family togetherness, togetherness where the family indulges in common constructive endeavors and relaxation. A man's lifetime has only so many days alloted for the enjoyment of this sort of thing, and he certainly should not deny himself a boat to enhance those days.

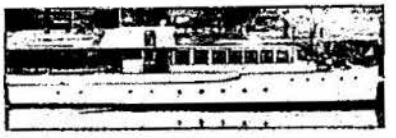


36' CHRIS-CRAFT 1960 Constellation, twin 185 hp Chris-Craft engines, teak decks, electric and alcohol stoves, radiophone, Constellation compass, silencers, hot pressrue water, life rails, $16,500—Here.

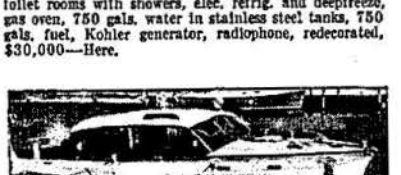


42' MELBY FADUM (Norway) new Double Cabin-Flybridge Cruiser, twin 225 hp Gray V-8s, silencers, searchlight, sniffer, fathometer, gas stove, sleeps 7, $23,000—N. Y.

42' WHEELER 1956 Flybridge Sedan Sportfishman, Twin 1960 Caterpillar diesels, Teak decks, 132W radiophone, Rockaway chairs, CO_2 system, Autopilot, Outriggers, Fishwell, Deep Freeze. $38,000—Here.



70' A. C. F. 1928 Cruising Yacht, twin GM 1955 6-71 diesels, largely rebuilt 1956-56, sleeps 10, 2 toilet rooms with showers, elec. refrig. and deepfreeze, gas oven, 750 gals. water in stainless steel tanks, 750 gals. fuel, Kohler generator, radiophone, redecorated, $30,000—Here.



35' ELCO 1947 Sedan Cruiser, twin 115 hp Chrysler Crowns, sleeps 6, dinette, fish well, searchlight, owner died, estate asking $9,500—Near.

New Boats on Display . . .

41' HATTERAS Flybridge Sportfisherman, 280 hp Chryslers
37' EGG HARBOR Flybridge Sportfisherman, 280 hp Chryslers
37' EGG HARBOR Flybridge Sedan, 210 hp Chryslers
35' WHEELER Flybridge Convertible, 177 hp Chryslers
34' HATTERAS Flybridge Cruiser, 280 hp Chryslers
33' CRUIS-ALONG Flybridge Eldorado, 225 hp Grays
29' CENTURY Clipper, 225 hp Grays
29' CENTURY Flybridge Gulfstream, 188 hp Grays
26' CENTURY Clipper, 215 hp Gray
26' CENTURY Raven 215 hp Gray
26' WHEELER Fibreglas Cruiser, 188 hp Gray
22' CENTURY Raven, 190 hp Chrysler
19' CENTURY Raven Skiff, 138 hp Gray
18' TURBOCRAFT Conquistador 238 hp Gray
17' CENTURY Resorter with top, 225 hp Gray
16' TURBOCRAFT Sport Utility, 120 hp Chrysler
13½' EVANSTON Enterprise Sloop with sails

Used Boat Offerings . . .

61' WHEELER 1954 Promenade Yacht, twin GM 6-71 diesels
48' GREBE 1961 Flush-Deck Yacht, twin GM 6Y-63 diesels
60' HUCKINS 1955-DC/FB, twin 335 hp Cummins turbo diesels
63' SAM CROCKER 1935 Aux. Schooner, 185 hp Chris-Craft
40' STOWMAN 1959 Newporter Ketch, 33 hp Mercedes diesels
41½' E. & H. BOLGER 1957 FB Sportfisherman, '62 P. & H. diesels
46' CHRIS-CRAFT 1956 Constellation, GM 4-71 diesels
40' CHRIS-CRAFT 1959 FB Sportfisherman, 275 hp Chryslers
48' CHRIS-CRAFT 1957 Constellation, 275 hp Chris-Crafts
53' CHRIS-CRAFT 1953 DC/FB Conqueror, 200 hp Chris-Crafts
42' CHRIS-CRAFT 1957 Constellation, 200 hp Chris-Crafts
42' CHRIS-CRAFT 1955 Commander, GM 4-71 diesels
41' LAWLEY 1937 Marconi Sloop, 25 hp Chrysler
36' EGG HARBOR 1960 Conv. Sedan, 177 hp Chryslers
40' RICHARDSON 1957 Sedan, 150 hp 1960 Grays
50' CHRIS-CRAFT 1952 Catalina, 225 hp 1958 Chryslers
33' TROJAN 1961 Express, 210 hp Interceptors
36' HUBERT JOHNSON 1946 FB Sportfisherman, 215 hp Grays
33' BOOTHBAY 1959 TC Cruiser, GM 4-53 diesels
42' CHRIS-CRAFT 1943 Walk-Around Cruiser, GM 6-71 diesel
31' EGG HARBOR 1960 Sportfisherman, 177 hp Chryslers
34' COLONIAL 1958-59 Express, 170 hp Grays
29' TROJAN 1960 Express, 135 hp Interceptors
33' LEEK 1957 Pacemaker Express, 125 hp Chryslers
27' SNYDER 1958 Flybridge Skiff, 100 hp Grays
38' HUBERT JOHNSON 1941 Sedan, 115 hp Chryslers
33' RICHARDSON 1952 Express, 145 hp Chris-Crafts

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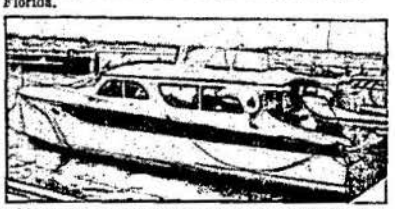
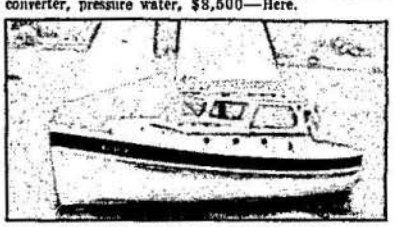
52' CHRIS-CRAFT 1953 DC/FB Conqueror Sun-Lounge, twin GM 6-71 diesels, sleeps 10, elec. refrig. and freezer, elec. stove and gas oven, autopilot, generating plant, converter, radiophone, fathometer, air horns, $36,000—Point Pleasant.

42' CHRIS-CRAFT 1955 Commander, 100 hp Chris-Craft engines, hot shower, elec. toilet, teak deck and cockpit, 5kw Kohler generator, Constellation compass, autopilot, 100W phone, searchlight, radar, spare shaft, $16,500—Here.

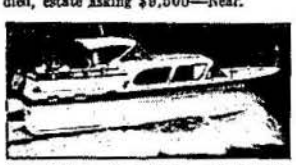
32' NEVINS 1956 Power Yacht, GM diesels, teak decks, 1000 gals. water in Monel tanks and 1000 gals. fuel, 2-20kw diesel generators, radiophone, RDF, fathometer, 2 radars, 2 TVs (1 color), $280,000—Florida.



38' WHEELER 1940 Sun-Lounge Sedan Cruiser, twin Chryslers, sleeps 6, gas stove, CO_2 system, radiophone, converter, pressure water, $8,500—Here.



31' PENOBSCOT 1952 Motor Sailer, 95 hp Chris-Craft engine, teak cockpit, Shipmate stove, Kidde CO_2 system, converter, stainless rigging, Jib and mainsail, $11,000—Here.



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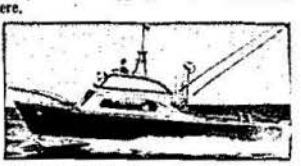

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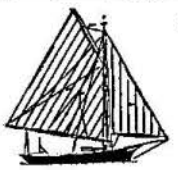

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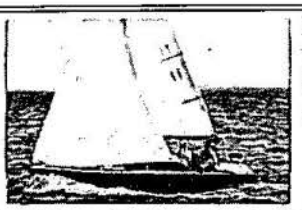

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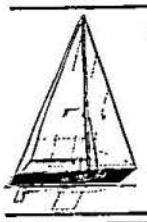

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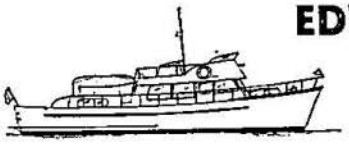

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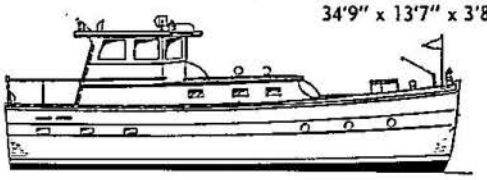

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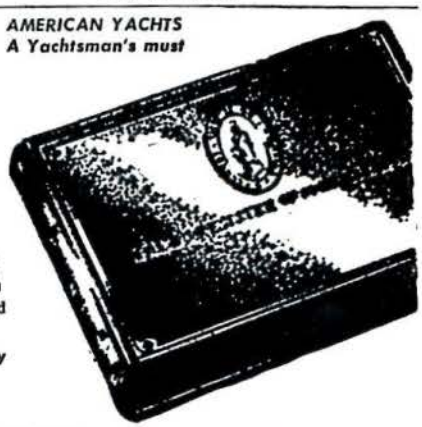

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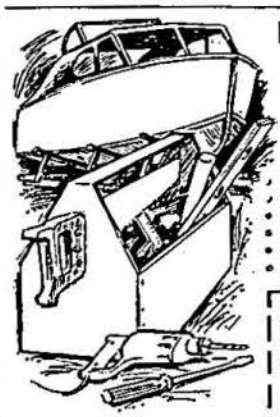

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Phil Hildbrandt, Jr.
Phone: Fireside 8-2255
OSAGE BEACH
Lake Rd., 54-49
ST. LOUIS
2012 Lucas-Hunt Rd.

SUMMIT, NEW JERSEY
Mid-Atlantic
Correct Craft, Inc.
197 Blackburn Road
Phone: Crestview 3-6885
Area Code 201

SANBORNVILLE, NEW HAMPSHIRE
New England
Correct Craft, Inc.
Phones: Milton 652-4661
Sanbornville 522-3369
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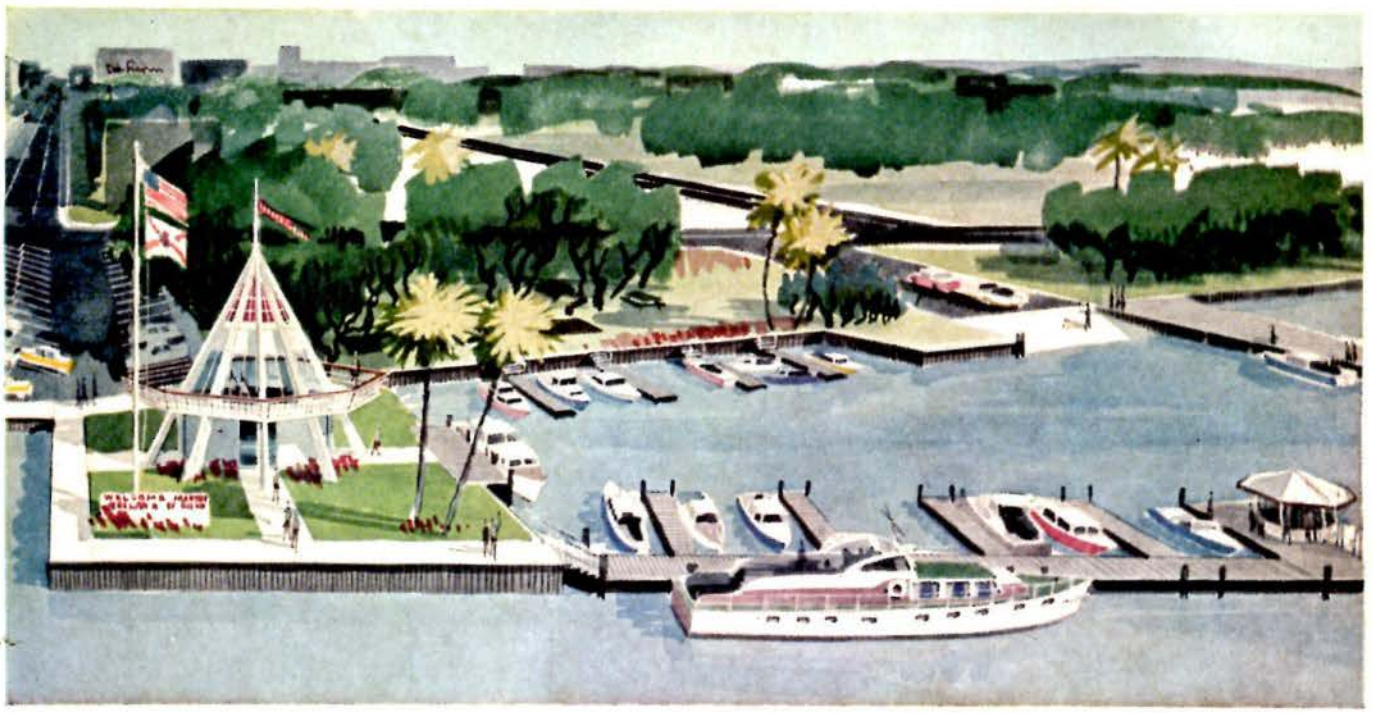

Florida's new Marine Welcome Station located in downtown Fernandina Beach. Nearby: one of Florida's fine beaches, the spring training grounds of the Washington Senators' farm clubs, championship 18-hole golf course, historic Fort Clinch State Park, with year-round camping facilities.

Announcing the New **Florida** Marine Welcome Station at Fernandina Beach

Opening in January, the only Marine Welcome Station in all the world. Here you will receive a warm welcome to Florida . . . secure maps and charts...draw on the latest weather and routing information. Navigation charts will be available at reasonable cost. There'll be free orange juice—and a storehouse of information about Florida. Marine ship-to-shore facilities are available.

The associated marina can accommodate boats drawing up to 7 feet. Gasoline, oil, diesel fuel and ice are available—water and electricity are included in the dockage charge. There are free launching ramps.

The new Florida Marine Welcome Station is a symbol of what Florida has to offer the boating enthusiast: A network of natural and man-made waterways, thousands of lakes, 116 navigable rivers present boundless opportunities for cruising, exploring, great fishing. And something exciting can happen whenever you step ashore.

On the practical side: Marine facilities in 141 Florida communities provide berths, in-and-out service, fuel, repairs, utilities.

Hail to all who "come by sea." I cordially invite you to make Florida's Marine Welcome Station at Fernandina Beach your first port of call.

Gov. Farris Bryant

Governor, State of Florida

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